COMMUNITY PARTICIPATION IN DEVELOPMENT PROJECTS IN KENYA

Analytical review of factors influencing sustainable water projects in Shianda Division, Kakamega County

Kanyanya Loice Ongwen, Dorothy Nduge Kyalo, Angeline Sabina Mulwa, and Phyllisters Daisy Matula
Full Length Research Paper

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INTRODUCTION

Project Sustainability is a desire of every community, private agency or Government as a means of ensuring that positive gains are delivered to the target communities in long term. This phenomenon is brought to focus in this study based on water projects that aim at improving the quality of life of community water users. The implementation of such projects is always easier but their sustainability poses a challenge. The study objectives of the study was to establish the extent to which Community participation; Community education and training on technology used; Project location and Community capital contribution influence sustainability of water projects. Descriptive survey was used as the research design and the target population was 44,325 people. Stratified proportionate random sampling techniques were used to select 196 respondents who included community leaders, project leaders, water users/beneficiaries and key informants from the division. The sample for the study comprised of 23 Community Water Projects, 46 Community Project Leaders, 8 Local leaders and 142 community water users. Data was collected through questionnaires and analyzed through descriptive statistics where frequency tables and percentages were used to represent the data. In addition, a multivariate regression model was applied to determine the relative importance of each of the three variables with respect to Sustainability CWPs. The findings of the study revealed that both men and women were involved in leadership with more men (58%) in local leadership and more women (65%) in project leadership. Almost all CWUs as well as the leaders were employed with the highest percentage in self-employment thus able to contribute towards repair and maintenance of CWPs in monetary terms. The study also revealed that, of the three factors under study, two of them (Community Education and Training on Technology used and Community Capital Contribution) influenced sustainability of CWPs in Shianda Division to a very great extent but project location though an important factor to consider for CWPs’ sustainability, its influence was moderate. The findings further revealed the need for project initiators: to involve CMs at all levels of the project cycle as this would build ownership of the project, train and educate CMs on how to operate and maintain the water facility so that its continuity is not affected by breakdown, allow CMs to contribute towards the choice of the site for the water point and advise them on the need for them to contribute money towards operation and maintenance of CWPs as this encourages ownership and assures sustainability. The study recommended that community members be trained and educated on the technology used in CWPs and on how to operate and maintain the system. The study also recommended that these trainings need to be frequent and an analysis on the education level of the CMs be made in order to establish the most suitable language mode of training to use so as to assure effective transfer of knowledge from the trainer to the trainee. Project CMs should be involved in identification of the site for the project in order to encourage ownership in terms of protection and cleanliness of the site. Community water users should be encouraged to contribute towards the same in order to avoid rendering the project dysfunctional or unsustainable on breakdown as they wait on well-wishers who may not be available.

Key words: Water projects, sustainability, community participation, capital contribution.
could be social, cultural or economic. Implementation of most projects may be successful but their sustainability may be a challenge. According to Hurton et al. (2007), water is the most important natural resource, indispensable for life and at the same time the backbone for growth and prosperity for mankind. The General Assembly of the United Nations drew critical attention to the importance of water to sustainable development and poverty alleviation by declaring 2003 The International year of Fresh water with one of its aims being to reassert the Millennium Development Goals (MDGs) target for water of reducing by half the proportion of people without the access to safe drinking water and stop the unsustainable exploitation of water resources (UNDP-WSP, 2006).

Despite there being a universal recognition for the importance of safe water in poverty alleviation and socio-economic development globally, the access to safe drinking water remains low and this are attributed to many water supply systems not being sustainable. Smith and Marin (2005) states that worldwide, about two million people struggle daily for access to safe and sufficient water. In the entire world, Africa is the region that suffers most from inadequate access to water supply with only 62% of its population having access to potable water supply. Furthermore, 55 of the countries in the world whose domestic water supply is below 50 litres per capita per day, 35 of them are in Africa, Yahaya (2004). The Republic of Kenya, 2007, estimates of piped water coverage provided by Ministry of Water and Irrigation in 2007 stood at 47% nationally.

According to Nerubucha, (2011), Kenya is a water scarce country and it is therefore important to ensure that water resources are continuously monitored, assessed and evaluated in order to plan for water security. It is important to understand the climate and identify trends. It is clear that the water resources (both surface and underground water) are unevenly distributed spatially in the country and hence the need for proper management (Whittington, Davis and McClelland, 1998). Failure to adequately manage water resources imposes huge costs on Kenya’s economy as observed by (Kinoti, 2010). According to the Ministry of Water and Irrigation, there are approximately 680 piped water systems that provide over 740,000 water connections throughout the nation. Additional 350 community run water schemes exist in the country. A great percentage of these connections are however inactive due to poor management and maintenance (Republic of Kenya, 2007).

Water projects failure possess a problem that can be self-perpetuating. Vanloon and Droogers, (2002) in their study on Water Evaluation and Planning System in Kitui, points out that bad experience on unsuccessful water projects in the past alienate people and make them likely to be hostile towards future initiatives. Projects implemented with funding limited to short term goals undermine capabilities of a local institution to sustain itself in long term. Hence in the case of water projects, community participation, their education and training on the technology used and how to use the water system and location of the water project are paramount for sustainability. According to Themartic group (2005) among the 24 million rural dwellers in Kenya about 10 million have access to improved water supply either through piped water or point source systems. Of those with access 30% of them are served by community based water supply schemes which are developed by self-help groups through donor support and government institutions. The groups study further reveals that most of these community based water supply schemes are inactive yet the government has continued to establish more water projects with little regard to rehabilitation of non-functioning ones.

Community water projects in Shianda division presents a typical case of rural community with water projects previously developed either through self-help groups with donor support or Government institutions like Municipal council of Mumias, CDF and KWAHO or largely by the external institutions through influential people from the community. Most of these water projects are deep dug boreholes, hand pumps, piped water or springs and are run by community project committees/ leaders. Some projects mostly under the support of KWAHO have been reported to be successful as sited at http:www.kwaho.org/, and this has largely been enhanced through strategies integrated before completion of projects such as: Effective mobilization of communities through sensitization and training to achieve ownership; Collaboration with various stakeholders (local government, local leaders, politicians and target communities); Application of appropriate technologies, Gender considerations that empower women to handle community projects; Capacity building and sensitivity to social-cultural factors in the communities. However the situation in the region still possess question of sustainability as most of the projects do not operate to full potential and some have broken down and not rehabilitated. It’s due to this scenario that this study intends to assess the factors influencing sustainability of water projects in the region after external support is withdrawn.

Statement of the problem
Sutton, (2004) in his survey carried out in 11 countries in sub-Saharan Africa, observed that The United Nation’s Millennium Development Goals (MDG’s) that aim at reducing by half the 1990 figures, of people without access to water and sanitation by the year 2015, have been important in galvanizing global attention and support for water and sanitation. However such efforts
that focus on expansion of new services run the risk of undermining the functional sustainability by encouraging rapid construction of infrastructure rather than long term, critically needed investments in operation and maintenance. Montgomery and Elimelech (2009) argues that what is urgently needed to stem the trend of despair and accelerate the progress in achieving MDGs, is a coherent focus on sustainability

Studies conducted on water project sustainability such as Ngetich, (2009) showed that most water projects did not function to the full capacity and recommended for more study to be done on the influence of project location on sustainability of water projects. Study by Habtamu, (2012) established that most water project decline in performance shortly after external support is withdrawn and recommended that further study be done on factors that influence sustainability of such projects in other rural parts of other countries in Africa in order to bring a generalization of the findings. A study by Kainda, (2012) established that community contribution and awareness were paramount to water projects sustainability but recommended for further studies in other parts of the country on factors influencing water projects sustainability in order to bring a generalization of the findings. Studies by Mbajiwe, (2009), Airo, (2009)Rimbera, (2012), and Ali, (2012), reported lack of project sustainability due to low level of community awareness, approaches used by developers and lack of proper feasibility study. This study therefore was designed to focus on the influence of education and training, technology used, capital contribution and project location have on the sustainability of water projects in Shianda Division.

**Objectives of the study**
- To investigate the influence that community education and training on the technology used has on sustainability of community water projects.
- To assess the extent to which project location influence sustainability of community water projects.
- To determine the influence that Community capital contribution has on the sustainability of Community water projects.

**Literature review**
Sustainability is a problem which faces almost all development Project, in industrialized countries as well as in the developing ones. In recent years the debate took on new urgency through the adoption of Agenda 21 at the Earth Summit conference in Rio de Janeiro in June 1992. In the global debate sustainability was considered primarily in terms of continuing to improve human well-being, whilst not undermining the natural resource base on which future generations will have to depend (Len Abrams, 2003). Sustainability as a concept in development projects is dated to 1980s and defining development and sustainability has been difficult. Brundtland Commission (1987) however defined sustainable development as “one that meets the needs of the present without compromising the ability of future generations to meet their own needs”. This means that a sustainable project must meet the present as well as the future human needs and aspirations. It must be one whose outputs and services are maintained continuously over time and keeps that focus with its original goals and objectives. Projects are designed and implemented to achieve certain set goals. Some projects require that their activities be sustained over time to ensure continued flow of set outputs hence achieve desired change that could be social, cultural or economic. Water projects are implemented to ease accessibility of the community members to clean water and hence improve their well-being (quality of life). Implementation of these projects is always successful but their sustainability poses a challenge. Mulwa (2004), points out that sustainability concerns around projects at community level encompasses different dimensions that include; social (ability of a project to restore peoples sense of worth, dignity and self-belief), economic (ability of the local people to identify, procure and use available resources-whether human or material and have no or limited dependency on external), environmental (sustainable use of resources and preservation of the environment-useful in water projects as people will conserve water catchment areas), structural and organizational (an effort of dominant institutions managing projects to become more responsive and sensitive to local needs and aspirations) as well as technological (an effort to develop appropriate technology and promote the use of indigenous knowledge) sustainability. A sustainable project should be able to address all these dimensions.

**Community education and training on the technology used**
Human capacity development through specialized training of project managers, staff, community members and the whole project team has been noted to be important for project success and sustainability. Campos (2008), in an intervention model introduced in Peru for water supply considered community training as an important component in which the project used various methods of training such as audio-visuals. He argues that training on issues like operation and maintenance empower the communities to look after water supply systems thus aiding sustainability. Lack of community education is cited as one of the factors which could lead to breakdown and non-sustainability of water supply projects in developing countries Ademiluyi and Odugbesan, (2008). They further point out that even where full community participation or management is planned from the start, community-level committees and
care takers may lose interest or trained individuals may move away. This can be a particular risk if community level organization is on a voluntary basis. Mengesha et al. (2003) in their study on sustainability of drinking water supply projects in Rural of North Gondar, Ethiopia recommend that building adequate skills and capacity to maintain water sources is an essential factor to sustain the water system. The National Academy of Sciences (1997) observes that competent operating personnel are vitally important for sustained and safe operation of small water systems. Accordingly, good operator training is as essential to improving small water systems as are improved technologies, organizational fixes or regulatory oversight. Without adequately trained personnel, even a well-financed and organized system with the most advanced technology and regular compliance visits will fail to reliably deliver safe drinking water to its customers with time. This agrees with observations by Campos (2008) who argued that training on issues like operation and maintenance empower communities to look after water supply systems thus aiding sustainability. Community members must be equipped with the necessary knowledge on how to operate, repair and maintain the water supply system as this will enhance sustainability of the project.

Technology which fails to fulfill the needs of its users, which is poorly installed or which is difficult to maintain or repair, possess significant challenges for sustainability. Water Aid’s recent sustainability study in Zambia highlighted, for example, the rapid corrosion of hand pump rising mains as a constraint to sustainable community water supplies (Len Abrams, 2003). There is no such thing as a maintenance-free technology yet even gravity water supply schemes, which were expected to provide sustainable services, have failed to live up to that promise. Hardware (including pumps, pipes, and spare parts) is sourced and procured by international agencies, governments, private providers and NGOs. The questions around who buys, what is procured and how quality of hardware is assured are all important for sustainability. In particular the links between the community and the suppliers of spare parts are crucial. The community need to be trained on how to use the taps, springs, hand pumps among others and it should also be trained on how to maintain the facilities because the external institutions will not always be available in case of breakdowns. Most of the community water projects are either hand pumps or taps (which have underground pipes) or springs and all these must be properly maintained to enhance their sustainability. Proasne (2005). Argues that for water projects to give sustainable results, Project Managers should ensure that there will be funding to support identified solutions to the problems in long term, and for this to happen it is necessary that the technologies used be cost effective and CMs receive instructions on the new techniques as well as training on how to maintain and repair the equipment. Cost effective technologies will give CMs a humble time in terms of repair and maintenance, and this will enhance sustainability of the project. Njonjo and Lane emphasizes that without official policy to restrict the range of hand pumps in East African region, a large number of hand pump manufacturers will continue to flood this region with obsolete machines. They add that this will continue to increase operational costs and hence further aggravate the problem.

**Project location and sustainability**

Site identification for any project is a paramount factor to consider especially for water projects. The location of the project will determine how the water system will be handled, looked after and even maintained. Poor location of water projects may cause lack of ownership of the project by CMs which may affect sustainability of such projects. Habtamu, (2012), notes that poor location of water projects in Nigeria has led to lack of ownership of projects by CMs rendering such projects non-functional and lowering their sustainability. Some CWPs are located depended on influential families/people in the communities and this can affect the sustainability of such projects. He further says that poor location of water projects may affect the protection of water projects in terms of the fences around them and this may affect the functioning of the project as animals can even breakdown the pumps as well as the spring walls. When water projects in form of springs are used for multiple purposes such as domestic use, livestock watering, irrigation and tanker supply, care should be taken to prevent contamination of water used for human consumption especially for wells and unprotected springs due to poor location (Muthusi et.al, 2007).

**Community capital contribution**

In rural community water supply most national policies require a capital contribution from the users, either in-kind (labor and local materials) or, if in cash, in the region of five percent of the capital cost. This is rarely recovered however, and so improved services are by default a gift (albeit often with some community participation in construction) from the government or NGO to the community. There is disagreement among practitioners about whether user cash contributions to capital costs help to cement community ownership of rural water supply systems and so contribute to sustainability. However, there are cases in which a cash contribution to capital cost is raised but then ring-fenced for the water supply, for instance by putting it into an operation and maintenance account on behalf of the community. In this way it is of direct benefit to the users. The only approach to rural water supply in which the users pay the full
capital costs of new or upgraded water points is ‘self-supply’.

Rock storm, (2003) established that operation and maintenance water services worldwide costs money but insufficient funds limits the purchase and spare parts. He argues that External Agencies have been reluctant to finance operation and maintenance activities while Governments often accord it less priority yet the service users (community water users) who are the potential source of finance on the same, do not typically see water as a commodity for sale and so many a times they are unwilling to pay for it. Community capital contributions could take the form of community levies—where individuals or households in the community agree to contribute a given fee toward running and maintenance of the water system.

The contributions could also take the forms of: donations from CMs during harvest and fines paid by community members who break community rules. The community capital contributions collection could be affected or hampered by the methods used for the same. The researchers’ observation is that most local communities are informal in nature and this makes most of the community projects lack basic procedures and processes of fund collection as they rely on mostly on voluntary labour of elected officials who operate in homes without official facilities. Such systems get low returns and this turns out to be threat to committees that carryout this exercise as some of them are insulted or dehumanized. These systems also do not have clear accountability records and this may make CMs doubt such systems making them draw back in contributions. Once a project cannot generate enough revenue from beneficiaries, its sustainability will be threatened as repairs and maintenance cannot be provided for when need arise. Misappropriation of funds collected as a result low or lack of professionalism may also contribute to poor Community Capital Contributions leading to poor maintenance and thus lack of sustainability (figure 1).

**RESEARCH METHODOLOGY**

Descriptive research design was used in this study in order to describe the phenomena of community water projects in Shianda division. The study targeted the 77...
Table 1: How CE&T on technology used influence sustainability of CWPs

<table>
<thead>
<tr>
<th>Level of influence</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very great extent</td>
<td>108</td>
<td>55</td>
</tr>
<tr>
<td>Great extent</td>
<td>39</td>
<td>20</td>
</tr>
<tr>
<td>Moderate extent</td>
<td>29</td>
<td>15</td>
</tr>
<tr>
<td>Less extent</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>196</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 2: Aspects of Community Education&T on technology used

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skills and knowledge</td>
<td>102</td>
<td>52</td>
</tr>
<tr>
<td>Frequency of training</td>
<td>25</td>
<td>20</td>
</tr>
<tr>
<td>Language of delivery</td>
<td>39</td>
<td>28</td>
</tr>
<tr>
<td>Total</td>
<td>196</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 3: Influence of condition of water points on sustainability of CWPs

<table>
<thead>
<tr>
<th>Level of influence</th>
<th>Frequency</th>
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</tr>
</thead>
<tbody>
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</tr>
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<td>Moderate extent</td>
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</tr>
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<td>Less extent</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>196</td>
<td>100</td>
</tr>
</tbody>
</table>

FINDINGS OF THE STUDY

Factors influencing community water projects in Shianda Division
This study sought to examine the influence that various factors had on the sustainability of community water projects in Shianda Division. All the respondents in the three categories of local leaders, project leaders and CWPs were asked to indicate the influence of these factors on sustainability.

Influence of community education & T on technology used on the sustainability of community water projects
The study sought to establish how sustainability of CWPs in Shianda Division was influenced by community education and training on technology used. The findings are summarized in table 1.

The study finding indicated that CE&T on technology used was quite important in the sustainability of community water projects. This was evident in how respondents rated this factor where 55% said CE&T on technology used influenced sustainability of CWPs to a very great extent, 20% indicated that CE&T on technology used influenced sustainability of CWPs to a great extent, 15% of the respondents indicated that CE&T on technology used influenced sustainability of CWPs to a moderate extent, while 10% of the respondents indicated that CE&T on technology used influenced sustainability of CWPs to a less extent. These findings reveal that CE&T on technology used influenced sustainability of CWPs to a very great extent. The respondents were asked rank the three indicators of community education and training on the technology used in the order of their importance in influencing project sustainability. The results are shown in table 2.

Results in table 2 indicated that skills and knowledge in operation and maintenance of water equipment was ranked as having the highest influence by 52% of the respondents, while language of delivery was perceived to have highest influence by 28% and Frequency of training was ranked highest by 20% of the respondents. This implies that what matters is the effectiveness of training and the relevance of the skills and knowledge acquired by the participants and not the frequency of training. It also suggests that the language used in training should be understandable to the participants in order to make the training effective.

Influence of condition of water points on the sustainability of CWPs
The study also sought to assess the extent to which sustainability of CWPs in Shianda Division was influenced by project location. The respondents were asked to indicate the extent to which project location influences sustainability of the project. The findings are shown in table 3.

The study deduced that condition of water points was important in sustainability of community water projects as most respondents (55%) perceived it to have moderate influence, while 20% and 15% indicated that condition of water points influenced sustainability of CWPs to a great extent and very great extent respectively and only 10% of the respondents indicated that condition of water points influenced sustainability of CWPs to a less extent. These findings reveal the influence condition of water points on...
sustainability of CWP's ranges between moderate to very great extent.

Results of how the aspects of project location influenced sustainability of CWP's revealed that of the three aspects of project location, sustainability of CWP's was influenced in terms of maintenance of the fence around the project as 51% of respondents agreed, 27% of respondents agreed that sustainability of CWP's was influenced in terms of cleanliness of the area and 20% of the respondents agreed that sustainability was influenced. This reveals that a CWP that is not located in a convenient point for CWU's, its sustainability will be influenced more than that conveniently located (table 4).

Influence of Community Capital Contribution on sustainability of CWP's.

The study also sought to determine the influence that Community Capital Contribution had on sustainability of CWP's in Shinda Division.

The study established that Community Capital Contribution was quite important in sustainability of community water projects and the extent of its influence in Shinda division as evident in the rating of the respondents where 61% rated it as having a very great influence, 15% indicated that Community Capital Contribution influenced sustainability of CWP's to a great extent, while, 24% of the respondents indicated that Community Capital Contribution influenced sustainability of CWP's to a moderate extent. These findings reveal that Community Capital Contribution play a major role in the sustainability of CWP's as its influence was to a very great extent (table 5).

Results shown in table 6 indicate that of how the aspects of Community Capital Contribution influenced sustainability of CWP's revealed that out of the three indicators of community capital contribution, contribution materials had the greatest influence (87%) while contribution of financial capital and labour had very little influence on project sustainability.

The study also sought to determine the trend of various aspects of project sustainability in community water projects in Shinda Division for the last five years. From the findings, majority of the respondents were of the view that the rate of material capital, financial and Labour of community water projects in Shinda Division had improved as shown by a mean score of 4.0714, 4.0357 and 3.8571 respectively (table 7).

Regression analysis

In this study, a multiple regression analysis was conducted to test the influence among predictor variables. The research used statistical package for social sciences (SPSS V 21.0) to code, enter and compute the measurements of the multiple regressions.

Table 8 is a multiple regression model to show how community participation influences sustainability of water project. The value of R² of the model is 0.815 meaning that community participation contributes 81.5 % as a determinant of project sustainability. This implies that 81.5 % of the variations in sustainability CWPs are explained by community participation, Community education and training on technology, condition of water points and community capital contribution.

From table 9, it is clear that the regression model predicting the relationship between the dependent and independent variables is significant at F= 4.720 and P = 0.002.

The established model for the study was:

\[ Y = 1.193 + 0.806 X_1 + 0.648 X_2 + 0.413 X_3 + 0.716 X_4 \]

Where,

\[ X_1 = \text{Composite index value of Community education and training on technology} \]

\[ X_2 = \text{Composite index value of Community participation} \]

\[ X_3 = \text{Composite index value of Community capital contribution} \]

\[ X_4 = \text{Composite index value of Community education and training on technology} \]
Table 8: Model summary

<table>
<thead>
<tr>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.903</td>
<td>0.815</td>
<td>0.616</td>
<td>0.97120</td>
</tr>
</tbody>
</table>

Table 9: Summary of one-Way ANOVA results of the regression analysis between sustainability CWPs and predictor variables

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>6.62</td>
<td>4.000</td>
<td>1.655</td>
<td>4.720</td>
<td>0.002</td>
</tr>
<tr>
<td>Residual</td>
<td>32.61</td>
<td>191.000</td>
<td>0.351</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>39.230</td>
<td>195.000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 10: Coefficients of regression equation

<table>
<thead>
<tr>
<th></th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>1.193</td>
<td>0.432</td>
<td></td>
<td>2.762</td>
</tr>
<tr>
<td>Community participation</td>
<td>X₁</td>
<td>0.806</td>
<td>0.108</td>
<td>0.146</td>
</tr>
<tr>
<td>Community education and training on technology</td>
<td>X₂</td>
<td>0.648</td>
<td>0.141</td>
<td>0.126</td>
</tr>
<tr>
<td>Project location</td>
<td>X₃</td>
<td>0.413</td>
<td>0.125</td>
<td>0.145</td>
</tr>
<tr>
<td>Community capital contribution</td>
<td>X₄</td>
<td>0.716</td>
<td>0.124</td>
<td>0.112</td>
</tr>
</tbody>
</table>

Dependent Variable: Sustainability CWPs

X₃ = Composite index value of Project location
X₄ = Composite index value of Community capital contribution

The regression equation in figure table 10 has established that taking all factors into account (community participation, community education and training on technology, project location and community capital contribution) constant at zero sustainability CWPs will be 1.193. The findings presented also show that taking all other independent variables at zero, a unit increase in community participation would lead to a 0.806 increase in sustainability CWPs and a unit increase in community education and training on technology would lead to a 0.648 increase in the sustainability CWPs. Further, the findings show that unit increase in project location would lead to a 0.413 increase in sustainability CWPs. In addition, the findings show that a unit increase in community capital contribution would lead to a 0.716 increase in sustainability CWPs. All the variables were significant as their P-values were less than 0.05. In terms of magnitude, the findings indicated that community participation had the highest influence on sustainability CWPs, followed by community capital contribution, then community education and training on technology while project location had the least influence on sustainability CWPs.

DISCUSSION OF THE FINDINGS

The findings of the study are briefly discussed as it relates to their objectives below:

Project sustainability: There is inconsistency in supply of water by CWPs attributed to lack of training on technology used (breakdown and vandalism of the equipment), leadership challenges, location of the project and embezzlement of funds collected for maintenance. This agrees with the statement of the problem that CWPs in Shianda Division portray both intermittency and continuity is sometimes be-felled by embezzlement of water funds, low capacities and lack of ownership.

Influence of community participation on sustainability of community water projects: The findings revealed that CP influenced sustainability of Community Water Projects in Shianda division to very great extent. The findings concur with the findings of Rimbera (2012), Mbajiwe P. (2009) and Vincent R. (2012) who found out that CP is a very paramount factor in community water projects if they are to be sustainable. The findings also revealed that projects facets at which CP greatly influence Community Water Projects sustainability were: project initiation, implementation and monitoring & evaluation. This implies that CMs need to be involved in Community Water Projects at all levels of the project in order to enhance their sustainability and this agrees with the findings of Ibrahim (2011) which revealed that CP at all stages of the
project is one of the major factors that influence implementation of sustainable Community Water Projects in Kenya.

Influence of CE&T on technology used on sustainability of CWPs: Appropriateness of design and technology in water projects has been found to be important and so is the knowledge of how to operate and maintain it if the project is to be sustainable. This is in agreement with findings of Ademiluyi and Odugbesan, (2008) who established that Lack of community education and training on technology used is one of the factors which could lead to breakdown and non-sustainability of water supply projects in developing countries.

Influence of project location on sustainability of CWPs: Location of CWPs is crucial for its sustainability as this will determine ownership of the project in terms of cleanliness of the area and fencing condition as well as protection from vandalism of equipment where hand pumps are used.

Influence of CCCs on sustainability of CWPs: Operations and maintenance of CWPs costs money and must be done to enhance sustainability. Community capital contribution becomes crucial for this to be achieved and this therefore calls for CMs cooperation and willingness to do so.

CONCLUSIONS
In conclusion sustainability of Community Water Projects in Shianda division is influenced by all the factors (project location community, participation mentioned, community education and training on the technology used, and community capital contribution) and all must be put in consideration when implementing any water project that is to serve the community. Project initiators must involve Community Members at all levels of the project cycle as this will build ownership of the project, Community Members must be trained and educated on how to operate and maintain the water facility so that its continuity is not affected by breakdown, Community Members must contribute towards the choice of the site for the water point and Community Members need to be advised on the need for them to contribute money towards operation and maintenance of Community Water Projects as this encourages ownership and assures continuity. Finally, the study infers that community participation had the highest influence on sustainability Community Water Projects, followed by community capital contribution, then community education and training on technology while project location had the least influence on sustainability Community Water Projects.

Recommendations
Based on the findings of this study, it was recommended that Local communities should be involved at all levels of project cycle in order to enhance ownership and hence sustainability. Project sustainability is of paramount importance for any project and especially for Community Water Projects and for that matter, CMs should be made aware of the need of water projects to serve not only their generation, but also future generations, hence take the necessary measures to ensure this. When community members identify, plan and share tasks involved in projects with professionals, and are involved in decision making on the activities that affect their lives, projects initiated are more likely to achieve their objectives. CP make projects gain a great support and ownership from CMs and this assures sustainability of projects and should be encouraged in all community water projects.

Further, the study recommended that community members be trained and educated on the technology used in CWPs and how to operate and maintain the system. Technology that CMs cannot operate or maintain, on breakdown renders the water project dysfunctional and not able to meet its objectives hence not sustainable. Community training and education on technology used must be done for any Community Water Project if it is to be sustainable. These trainings need to be frequent and an analysis on the education level of the CMs should first be made in order to establish the most suitable language mode of training to use so as to assure effective transfer of knowledge from the trainer to the trainee. Project location requires that community members be involved in identification of the site for the project in order to encourage ownership in terms of protection and cleanliness of the site.

Operation and maintenance of any water project need money and the community water users be enlightened and encouraged to contribute towards the project through labour finances and materials in order to avoid rendering the project dysfunctional or unsustainable on breakdown as well-wishers contribution may be enough or timely.

Recommendations for further studies
Future studies may focus on the influence of community members’ conflict, political stability and gender issues on project sustainability and based on other types of project.

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