

Community Participation in Project Planning and the Sustainability of Water Projects in Mbeere North Sub-County-Kenya

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Publication Date: August, 2026

Abstract

Sustainable water projects require not only investment in infrastructure but also genuine community participation in the process of planning and decision making. This study sought to investigate the effect of community participation in planning of projects on the sustainability of water projects in Mbeere North Sub-County, Embu County, Kenya. A descriptive survey research design, which involved both quantitative and qualitative methods, was employed. The study population consisted of 5,711 household heads and 11 key informants, who were from local administration and water sector organizations. From Ishiara, Kiang'ombe, and Muminji sub-locations, 376 household heads were sampled proportionately by use of Yamane's method. Simple random sampling was used for selecting household heads while key informants were chosen by purposeful sampling method. Data was collected through structured questionnaires and key informant interviews. The validity of the instrument was confirmed by Cronbach's alpha with reliability levels of 0.945 – 0.966, giving an overall average of 0.956. The descriptive statistics indicated that most of the respondents engaged in project meetings, shared their ideas prior to the planning process, and felt that the views of the communities were taken into account during project planning. In addition, most of the respondents indicated that there was an assessment of water-related problems before project implementation, the objectives of the project addressed the needs of the locality, and the community leaders engaged in project planning and communication of the plans. A correlation analysis indicated a positive and statistically significant relationship between community participation in planning and water-project sustainability ($r = 0.642$, $p < 0.001$). The study concludes that consultation, need assessment, leadership engagement, and participatory decision making increase the sense of ownership, accountability, acceptance and commitment to sustaining water projects in the community. It is recommended that county governments, water management committees, and development agencies institutionalize community participation in need identification, location selection, budgeting, prioritization and project decision-making processes.

Keywords: *Community Participation, Project Planning, Sustainability of Water Project, Community Water Projects, Mbeere North Sub-County*

1.0 Background of The Study

Sustainable water resource projects are essential for improving public health, livelihoods, agricultural production, and socioeconomic development. However, the construction of water infrastructure does not automatically guarantee continued access to reliable water services. Globally, project sustainability increasingly depends on meaningful community participation during project identification, planning, implementation, monitoring, and maintenance. Evidence from Pakistan and Iran indicates that participation strengthens local ownership, aligns interventions with community priorities, and encourages residents to support the long-term management of water facilities (Yasmin et al., 2024; Jafari & Bayat, 2025). Equally, inadequate information, limited community education, weak trust, exclusion from decision-making, and failure to use local knowledge can reduce sustained participation. Community involvement is also influenced by legal frameworks, social norms, economic conditions, and perceptions regarding whether participation will produce meaningful outcomes. Therefore, sustainable water projects require institutional arrangements that treat community members as active partners rather than passive recipients of development interventions (Yasmin et al., 2024; Jafari & Bayat, 2025; Fathi et al., 2025).

In sub-Saharan Africa, water sustainability is an issue in development due to the inadequacy of infrastructure, resources, poor management systems, and limited technical capacity in many communities. The situation makes participation by local people vital in ensuring that projects meet their intended purpose and operate effectively after the withdrawal of external assistance. Studies done within the region have indicated that involvement of the community in project identification, planning, mobilization of resources, implementation, monitoring, and evaluation can lead to increased project performance. Community-led identification of water issues led to locally appropriate solutions in Rwanda, even though lack of involvement in financial and site selection decision-making was a barrier to transparency (Keoye, 2024). Similar studies carried out in Tanzania have shown that involvement of stakeholders in planning and decision-making enhance performance of water infrastructure projects (Nkirwa, 2023; Hassan, 2025). In South Sudan, sustainable water security has been attributed to planning, monitoring, improved management system, and involvement of all stakeholders (Boying et al., 2020; Bugabo et al., 2026). However,

in the region, community participation has been very inconsistent, where communities are only consulted without having much impact on technical, financial, and management decisions.

In Kenya, under the Constitution of Kenya (Republic of Kenya, 2010), clean and sufficient water is guaranteed as a constitutional right while public participation is established as one of the principles of good governance in the country. This requirement makes it mandatory for communities to participate in water resource and development decision-making processes. The sustainability of most community water projects is however hindered by lack of ownership, insufficient maintenance systems, poor capacity building and participation concentrated at the implementation phase only. Evidence gathered from Kajiado, Machakos, Kitui, Turkana and Makueni counties reveals that the participation in planning, social inclusion, implementation, monitoring, evaluation and post-project management promotes the durability of such projects. Inclusion helps to ensure that women, youths, marginalized communities and the general water consumers participate in determining the direction of such projects (Kiprotich & Njoroge, 2014; Diing et al., 2022; Tendwa & Mutundu, 2023; Machuma et al., 2024; BA, 2025). Despite all these, there exists no well-focused evidence on how participation in various phases of project cycle promotes the durability of water projects since the evidence is scattered and not county-focused. This research aims at understanding the relationship between participation and sustainability of water projects within Mbeere North Constituency.

2.0 Literature Review

2.1 Theoretical Review

This study was anchored in Sustainability Theory, Community Participation Theory and Community Coalition Action Theory. Together, these theories explain the environmental, economic, social, institutional, and participatory factors influencing the sustainability of community water projects.

Sustainability Theory holds that present development needs should be addressed without compromising future generations' ability to meet their needs (Brundtland Commission, 1987). It views sustainability through interconnected environmental, economic, and social dimensions (Mensah, 2019; Purvis et al., 2019). In water projects, these dimensions include protecting water sources, ensuring adequate financing, supporting maintenance, strengthening institutions, and

promoting community ownership. The theory guided the dependent variable by assessing project functionality, reliability, maintenance, accessibility, and resilience to challenges such as drought, vandalism, equipment failure, and donor withdrawal. Water projects are more sustainable when environmental, financial, social, and institutional dimensions are addressed collectively (Nhamo et al., 2020; Banda et al., 2021; Nabukeera, 2023).

Community Participation Theory explains how local people become involved in decisions and activities affecting their lives. Arnstein's (1969) Ladder of Citizen Participation distinguishes tokenistic involvement from meaningful participation involving partnership, delegated authority, and citizen control. Effective participation promotes inclusion, empowerment, representation, and accountability, while weak participation occurs when external actors retain control over important decisions (Gaventa, 2020). The theory guided the examination of community involvement in project planning, implementation, monitoring, and risk management. Meaningful participation enables communities to identify needs, select priorities, contribute resources, monitor activities, report failures, and support maintenance. Projects with genuine and inclusive community involvement generally achieve stronger ownership, functionality, accountability, and continuity than projects based only on consultation (Tadesse et al., 2021; Phiri & Hebinck, 2021; Muriithi & Wanyoike, 2022).

Community Coalition Action Theory, developed by Butterfoss and Kegler (2002), explains how multiple stakeholders collaborate to address complex community problems. It emphasises shared leadership, trust, communication, joint decision-making, resource mobilisation, capacity building, and clear stakeholder responsibilities. Community water projects often require cooperation among residents, water committees, government agencies, development partners, private organisations, and local institutions. Effective coalitions strengthen coordination, institutional capacity, accountability, and resource availability. However, poor communication, unclear roles, unequal influence, and weak coordination may reduce project sustainability (Liu et al., 2021; Mutinda & Nthiga, 2023).

The three theories provided complementary explanations for the study. Sustainability Theory defined the conditions required for long-term project functionality. Community Participation Theory explained how beneficiary involvement promotes ownership and accountability, while Community Coalition Action Theory demonstrated how stakeholder collaboration supplies the

resources, authority, and capacity needed to maintain water services. Collectively, the theories supported the analysis of how community participation in planning, implementation, monitoring, and risk management influenced the sustainability of water projects in Mbeere North Sub-County.

2.2 Empirical Review

At a global level, the participation of the community during the project planning stage enhances the sustainability, relevance, and functionality of water projects (Sikkema et al., 2023). Community engagement early on helps the planner gain insight into the needs of the community, the environment, expectations, and technology preferences. This further enhances the ownership of the community members as well as their preparedness to sustain the water infrastructure when the outside help is no more (Abas et al., 2023).

In sub-Saharan Africa, the sustainability of water projects is predicated upon the integration of proper infrastructure and the inclusion of stakeholders in participation throughout the entire process of project execution. In South Sudan, Boying et al. (2021) showed that there was a need for increased capacity of water treatment and better distribution system in order to deal with the problem of water insecurity in Juba. The adoption of technical solutions, however, requires the inclusion of participatory management processes that would ensure the long-term sustainability of the infrastructure. Hassan (2025) showed that the inclusion of stakeholders in planning, decision-making, and resource mobilization had been critical for the success of the Zanzibar Urban Water Supply and Sanitation Project in Tanzania. Similarly, Keoye (2024) showed that the inclusion of communities in the identification of problems and solving them had been important for ensuring that projects became more sustainable in Rwanda. Nonetheless, a lack of transparency in selecting sites for construction as well as making financial decisions had prevented full support of the communities. Bugabo et al. (2026) broadened the concept of participation to cover also monitoring and evaluation phases of water projects in South Sudan.

Community participation in the process of site selection, identification of needs, and resource mapping in Kenya is essential for making the project relevant, acceptable, and owned. According to Munyao (2020), participation by Water User Associations was helpful in making water projects responsive to the community needs. However, the process of community participation will have little impact if it is used by certain individuals to manipulate the process or if it occurs after major decisions have already been made.

2.3 Conceptual Framework

Figure 1 presents the conceptual framework illustrating the presume relationship between participation in project planning and sustainability of water projects. It outlines how the independent variables are expected to influence the dependent variable.



Figure 1: Conceptual Framework

Figure 1 illustrates the proposed relationship between community participation in project planning and the sustainability of water projects. Participation in planning is measured through consultations, involvement in needs assessment, and leadership involvement. The framework proposes that stronger community participation improves project functionality, maintenance, and continued water availability over time.

3.0 Research Methodology

The study adopted a descriptive survey design to examine the relationship between community participation and the sustainability of water projects without manipulating the study variables. This design supported the collection of quantitative and qualitative information on participants' experiences, perceptions, and involvement in local water initiatives (Creswell & Creswell, 2018). The study was conducted in Ishiara, Kiang'ombe, and Muminji sub-locations of Mbeere North Constituency, Embu County. These semi-arid areas were selected because they experience persistent water scarcity and contain operational or ongoing boreholes, water pans, piped systems, and small earth dams.

The target population comprised 5,711 household heads and 11 key informants drawn from local administration and water-sector institutions. The household sample was determined using Yamane's (1967) formula at a 95% confidence level and 5% margin of error. Proportionate stratified sampling produced 191 respondents from Ishiara, 80 from Kiang'ombe, and 105 from Muminji, giving 374 household respondents. Households were selected through simple random

sampling using administrative household lists verified by village elders. Purposive sampling was used to select the area chief, assistant chiefs, and seven officials from relevant water institutions because of their leadership roles and technical knowledge.

Quantitative data were collected using a structured questionnaire covering community participation in project planning and water-project sustainability. Qualitative information was obtained through key informant interviews to provide deeper explanations of project experiences, institutional practices, and sustainability challenges. A pilot study involving 39 respondents was conducted in Siakago Sub-location to assess the clarity, relevance, and organisation of the research instruments (Saunders, Lewis, & Thornhill, 2019). Content validity was established through expert and supervisor review, while reliability was assessed using Cronbach's alpha. All variables recorded coefficients between 0.945 and 0.966, with an overall average of 0.956, demonstrating strong internal consistency (Cohen et al., 2018). The identified regression model was as follows;

$$Y = \beta_0 + \beta_1 X_1 + \epsilon$$

Where;

Y = Sustainability of water projects (Dependent Variable)

X₁ = Project Planning

β₀ = Intercept

β₁ = Regression coefficients

ε = Error term

4.0 Results and Discussion

The study aimed to evaluate the influence of community participation and sustainability of water project in Mbeere North Sub-County. The results are presented in the table below.

Table 1: Project Planning and Sustainability of Water Projects

Statement	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
Community members are invited to participate in meetings about water projects	63.3	17.0	9.0	4.0	6.6
There are opportunities to give views before water projects are planned	53.2	25.0	10.1	4.8	6.9
Community opinions are considered during planning of water projects	60.6	19.1	11.7	2.4	6.1
The current water project addresses real community needs	56.4	21.0	6.9	9.6	6.1
Community water challenges are assessed before planning begins	57.2	19.7	11.4	5.6	6.1
Project goals reflect actual community needs	58.5	18.4	10.6	4.8	7.7
Leaders guide and participate in planning processes	55.6	17.8	8.8	7.2	10.6
Community members are informed by leaders about project plans	64.4	17.6	10.6	3.5	4.0

Source: Field Data (2026)

From the findings, 63.3% of respondents strongly agreed that community members are invited to participate in meetings about water projects, 17.0% agreed, and only 9.0% were unsure. 4.0% disagreed and 6.6% strongly disagreed that community members are asked to attend meetings regarding water projects. Additionally, 53.2% of respondents strongly agreed that there are opportunities to voice opinions prior to the planning of water projects, compared to 25.0% who agreed with the statement and roughly 10.1% who were unsure. There are opportunities to voice opinions prior to the planning of water projects, according to 4.8% of respondents who disagreed and 6.9% who strongly disagreed. Nonetheless, 79.7% of respondents (strongly agreed and agreed) agreed that community opinions are taken into account when planning water projects, 11.7% were unsure, and 8.5% disagreed and strongly objected. Also, 77.4% of respondents (strongly agreed and agreed) felt that the current water project fulfills actual community needs, 6.9% were unsure, and 15.7% of respondents disagreed. About 76.9% (Strongly agreed and agreed) agreed that community water challenges are assessed before planning begins, 11.4% were

undecided while 11.7% disagreed that community water challenges are assessed before planning begins.

A significant number of respondents of about 76.9% (Strongly agreed and agreed) agreed that project goals reflect actual community needs, 10.6% were undecided while 12.5% disagreed. Majority of the respondents of about 73.4% (Strongly agreed and agreed) agreed that leaders guide and participate in planning processes, 8.8% were undecided while 17.8% disagreed. Lastly 82.0% of the respondents (Strongly agreed and agreed) agreed that community members are informed by leaders about project plans, 10.6% were undecided while 7.5% disagreed.

A key informant at the community water management committee stated that;

“Community members are regularly invited to participate in meetings concerning water projects to ensure that their views and needs are considered before planning and implementation begin. He explained that community consultations and needs assessments are conducted before projects are initiated so that the project goals reflect the actual water challenges facing households. He also mentioned that local leaders attend planning sessions actively and communicate project plans to community members to increase transparency, trust, and ownership of the projects”

The interview results support the quantitative results, as most of the respondents confirmed that community members attend meetings, share their views during planning, and are kept informed of project plans by local leaders. The results align Hassan, (2025) who discovered that involvement in planning increases community worth and makes development projects more sustainable. They were also in agreement with Keoye (2024) who suggested that including communities during planning enhances the accountability and effectiveness of community projects. In Kenya, the findings align with Machuma et al., (2024) who found that engaging local residents in project planning enhances their acceptance and the sustainability of the community projects. Besides, the results support Stakeholder Theory which states that actively engaging stakeholders in decision-making not only improve project success but also ensure its sustainability.

4.1 Inferential statistics

The study conducted correlation analysis between participation in project planning and sustainability of water project.

Table 2: Correction Matrix

	Sustainability of Water Projects
Project Planning	
Pearson Correlation	.642**
Sig. (2-tailed)	.000
N	376

** Correlation is significant at the 0.05 level (2-tailed)

Source: Field Data (2026)

These findings showed that there was a high, positive and statistically significant correlation between project planning and the sustainability of water projects ($r = 0.642$, $p < 0.001$). The results suggest that increased participation in project planning is associated with increased sustainability of the water projects. Consultations, need assessments, and decision making seemed to contribute to increased community commitment to water projects' sustainability.

5.0 Conclusion

This research has established that community participation is a key factor that determines the sustainability of water projects in Mbeere North Constituency. When communities get involved throughout the project cycle, water projects will stand a higher chance of becoming sustainable since they become reliable and responsive to the local needs of the people. The results have further revealed that community participation at the early stages of development of a project helps the communities determine the needs of the water project, share information and be part of decisions regarding project design and implementation. By being continuously involved, the communities get an opportunity to monitor the project, recognize problems and take necessary actions. Thus, community participation in the water projects should not be just about consultations or labor contribution.

6.0 Recommendations

The study recommends that the County governments, water management committees and development partners should involve community members throughout project planning.

Participation should include needs identification, site selection, priority setting, budgeting, and decision-making to strengthen ownership and local acceptance.

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