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Community Involvement for Sustainable Water Projects in Gutu Rural District, Zimbabwe

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Abstract: *Community involvement is increasingly recognized as a cornerstone of sustainable water project implementation in rural contexts. This study examines the role of community participation in sustaining water projects in Gutu Rural District, Zimbabwe. Guided by Stakeholder Theory and Management Theory, the research employs a descriptive survey design targeting a population of 500, from which a sample of 217 participants was drawn using Morgan and Krejcie's (1970) sampling table. Data were collected through questionnaires and interview guides, with quantitative responses analysed using SPSS version 25 and qualitative insights processed through NVivo 14. Findings reveal that community involvement significantly enhances the sustainability of water projects by fostering local ownership, accountability, and effective utilization of resources. The study underscores that when communities actively participate in planning, decision-making, and maintenance, water projects are more likely to achieve long-term viability. It concludes that strengthening participatory approaches is essential for ensuring sustainable access to safe water in rural Zimbabwe and recommends that project implementers institutionalize community engagement frameworks as a central strategy in water resource management.*

Keywords: *Community Involvement, Sustainability of Water Projects, Stakeholder Participation, Rural Water Management, Gutu Rural, and Zimbabwe*

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1. Introduction

Sustainability has become a central concern in infrastructure development, particularly in community-based water projects. Traditional sustainability assessments often emphasize the triple bottom line—economic, social, and environmental dimensions—yet they overlook integrated, context-specific indicators that capture long-term viability (Chawla, Chanda, Angra, & Chawla, 2018). With freshwater resources increasingly scarce and only about 1% of global water readily available for human use, effective strategies are needed to ensure equitable access to clean water for domestic, agricultural, and industrial needs (Papa, 2016; Mary, 2018). This urgency is even more pronounced in rural regions of developing countries, where water scarcity is compounded by weak governance structures and limited institutional support (Martin, 2018).

Globally, studies emphasize that project sustainability extends beyond infrastructure delivery to include mechanisms that guarantee benefits long after project completion (Armah et al., 2018). Yet many water schemes collapse prematurely, particularly in low-income contexts, due to poor community involvement and weak management capacity (World Bank, 2013). For instance, shortages in Somalia, Mauritania, Sudan, and Niger

demonstrate how weak community systems undermine access, while in Sub-Saharan Africa, 30–60% of water systems are non-functional at any given time (Kaumbulu, Muathe, & James, 2020). These failures highlight a need for participatory frameworks that actively involve communities in planning, implementation, and maintenance.

Empirical studies show mixed results regarding community participation. On one hand, projects designed without meaningful involvement often lack local ownership, leading to poor operation and maintenance. Gathege and Yusuf (2019) argue that low community participation, coupled with high costs and weak management, explains why many rural water schemes fail within a few years of commissioning. Similarly, Yahaya (2014) found that unsustainable rural water supply systems in Malawi and Zambia stemmed from inadequate engagement and lack of accountability mechanisms. On the other hand, studies also demonstrate that where communities are empowered, projects exhibit stronger resilience, accountability, and sustainability (Mgoba & Kabote, 2020).
In Rwanda, Samuel (2016) observed that donor-funded water projects failed largely due to insufficient community training, lack of ownership, and poor governance structures. Likewise, Bentley, Han, and Houessou (2015) noted that minimal participation during project design and construction diminished ownership and ultimately undermined sustainability. These findings resonate with Githinji's (2013) study in Kenya, which highlighted the critical role of community committees in safeguarding accountability and ensuring long-term functionality of community-based projects.

In Zimbabwe, water supply challenges mirror broader continental trends. In districts such as Gutu, rural households face irregular water supply and unsustainable piped systems. Even where infrastructure exists, its longevity is undermined by weak operation and maintenance practices, coupled with inadequate local ownership (Oluoch, Rambo, & Ganesh, 2020). Such challenges underscore the urgent need to strengthen participatory mechanisms in project management, ensuring that communities are not passive recipients but active stakeholders.

This study contributes to this discourse by examining how community involvement shapes the sustainability of water projects in Gutu Rural District, Zimbabwe. By interrogating existing gaps in local ownership, accountability, and maintenance, the study responds to broader calls for participatory water governance models that integrate communities as central actors in sustainable rural water management.

1.2 Statement of the problem

The sustainability of rural water projects is closely tied to the level of community involvement in their planning, implementation, and long-term management. However, in many rural contexts, including Gutu Rural District in Zimbabwe, projects continue to collapse prematurely despite significant investment in infrastructure. This raises concerns about whether insufficient participation mechanisms are undermining project longevity and whether stronger community engagement frameworks could enhance outcomes. Previous studies across Sub-Saharan Africa (e.g., Mgoba & Kabote, 2020; Samuel, 2016) emphasize the critical role of community ownership, yet localized evidence from Zimbabwe remains limited, leaving important gaps in knowledge. Furthermore, earlier research has often been descriptive, failing to apply robust mixed-method approaches that capture both quantitative and qualitative aspects of participation. This limits generalizability and weakens policy recommendations for rural water governance.
In light of these contextual, methodological, and geographical gaps, this study seeks to address the following research questions:

1. How does community involvement in the planning and decision-making processes influence the sustainability of water projects in Gutu Rural District?
   This question explores whether early and meaningful engagement of community members fosters ownership and long-term commitment to project maintenance.
2. What is the effect of community participation in monitoring, operation, and maintenance on the performance and functionality of water projects in Gutu Rural District?
   Here, the focus is on post-installation involvement, accountability mechanisms, and the extent to which participatory monitoring contributes to project resilience.
3. What contextual and institutional factors facilitate or hinder effective community involvement in sustaining water projects in Gutu Rural District?
   This question examines the socio-cultural, economic, and governance-related dynamics that shape the degree and quality of community participation.

By addressing these questions, the study aims to generate evidence that informs participatory water governance models and strengthens community-driven sustainability strategies in Zimbabwe and comparable rural contexts.

2. Literature Review

2.1 Theoretical Review

Stakeholder Theory (Freeman, 1984) emphasizes that projects must account for the diverse interests of all actors affected by implementation. In the context of community water projects, stakeholders include residents, management committees, government agencies, and donors. While the theory highlights the value of participatory engagement in decision-making, it has been critiqued for its complexity, as conflicting priorities among stakeholders may hinder consensus and delay implementation (Bryson, 2018). Nonetheless, the theory remains relevant for ensuring that communities are not passive beneficiaries but active participants whose needs and preferences guide project sustainability.

Management Theory, on the other hand, provides a framework for organizing, coordinating, and monitoring activities to achieve efficiency and long-term viability (Taylor, 1911; Fayol, 1949). While its emphasis on structure and control strengthens accountability, critics argue that overly hierarchical approaches can marginalize grassroots voices, weakening community ownership (Weber, 1978). Applied to water projects, management theory underscores the importance of effective leadership, coordination, and monitoring mechanisms, but it must be adapted to encourage participatory governance.

Using both theories in tandem provides a more holistic analytical lens: Stakeholder Theory emphasizes inclusivity and voice, while Management Theory stresses organization and efficiency. Together, they explain how community involvement—through shared ownership, accountability, and structured management—can drive the sustainability of rural water projects.

1.2Empirical Review

Community involvement has consistently emerged as a critical determinant of water project sustainability, particularly in rural and resource-constrained settings. Central to this is fostering a genuine sense of local ownership, where communities contribute both financially and in-kind—right from the project's design through to operation (Herrera, 2019). Such participation ensures that water initiatives are responsive to users' needs, capacities, and maintenance realities (Mercadier & Brenner, 2020; Setty et al., 2020).

Participatory approaches enhance social sustainability by increasing understanding, transparency, and trust. Kwena and Moronge (2015) show that enabling environments where communities freely participate foster ownership, often translating into user and maintenance contributions. Similarly, Weststrate et al. (2019) observe that communities that perceive tangible or intangible benefits from their engagement are more committed to sustaining projects. These insights align with the call for applying both Stakeholder Theory (emphasizing voice and inclusivity) and Management Theory (emphasizing structure and accountability) to analyze how participatory practices support long-term viability.

Empirically, participatory Monitoring and Evaluation (PM&E) enhances project sustainability. For instance, in Kenya's Samburu-Vigurungani Water Project, participatory planning, feedback, and appraisal collectively explained nearly 72% of sustainability outcomes, highlighting PM&E's centrality in community-driven water governance. In Nyeri County, Kenya, Muniu (2017) found that community involvement in decision-making, resource mobilization, and institutional collaboration significantly boosted sustainability, with Monitoring & Evaluation practices further moderating these relationships.

Broader reviews across SSA reveal that participatory WASH (Water, Sanitation and Hygiene) interventions consistently lead to better water accessibility, improved financial accountability, and stronger governance outcomes. Community engagement, it is argued, makes interventions locally relevant, builds problem-solving capacities, and strengthens long-term implementation—that is, projects are more sustainable when beneficiaries contribute to their design and delivery.
However, participatory approaches are not without shortcomings. Critical analyses highlight that top-down governance structures, elite capture, and underlying power imbalances can stifle genuine participation. In such contexts, participation may become symbolic rather than substantive, limiting its potential to engender ownership and sustain functionality. These critiques underscore theoretical gaps that Stakeholder and Management theories together help address: the former calls for broad, inclusive representation; the latter demands structured accountability—both essential for countering participation deficits.

Moreover, evidence suggests mixed outcomes in different contexts. A study in Kajiado County, Kenya, found that while capacity building and decision-making positively correlated with sustainable water services, community involvement per se had a statistically insignificant influence. This anomaly suggests that context, institutional capacity, and project design intricacies mediate the effectiveness of participation.

In sum, the literature underscores that meaningful, well-facilitated community involvement, especially through participatory planning and Monitoring & Evaluation, enhances sustainability of rural water projects. Yet its impact is context-dependent, susceptible to governance dynamics, and requires robust frameworks ensuring inclusion and accountability—precisely the theoretical linkage your study intends to explore in Gutu Rural District, Zimbabwe.

3. Methodology

3.1 Research Design

A research design provides a structured framework that guides the logical and coherent integration of study components to address the research problem effectively (Ganeshpurkar et al., 2018). Mwituria (2018) defines it as a comprehensive plan that ensures consistency in handling research questions. This study adopted a descriptive survey design, which facilitates systematic data collection and analysis. According to Creswell and Creswell (2017), descriptive surveys answer the "what, when, how, and where" questions, while Cooper and Schindler (2018) argue that this approach is suitable for defining the characteristics of target groups. The study employed both qualitative and quantitative approaches, analysed using Nvivo 14 and SPSS 25, respectively. Triangulation enhanced data credibility, while the study was anchored on the positivist paradigm, emphasizing the scientific evaluation of observable phenomena.

3.2 Study Area

The study was conducted in Gutu District, the third largest rural district in Masvingo Province, southern Zimbabwe. Covering 7,054 square kilometres with a population of 208,149, Gutu has one of the country's highest rural population densities, estimated at 22.08 persons per square kilometre. The district is administered by the Gutu Rural Council (Zimbabwe Administrative Division, 2024).

3.3 Target Population

The target population comprised 500 individuals directly engaged in water project implementation, including contractors (250), engineers (150), quantity surveyors (70), and project managers (30). The unit of analysis was construction companies involved in project execution (Mwituria, 2018).

3.4 Sample Size and Sampling Techniques

Sampling ensures an accurate representation of the population under study (Turner, 2020). Using Krejcie and Morgan's (1970) table, the study determined a sample size of 217 respondents. The sample was drawn through simple random sampling for contractors and engineers, while purposive sampling targeted project managers and quantity surveyors due to their technical expertise. Proportional allocation was applied using the Yamane (1967) formula, ensuring fair representation across categories.

3.5 Data Collection Instruments

Multiple instruments were used for robust data gathering:

- Questionnaires: Structured on a five-point Likert scale to collect quantitative data from employees (Cresw, Kausha, & Singh, 2017).
- Interview Guides: Conducted with project managers and quantity surveyors to capture in-depth qualitative insights.
- Pilot Testing: Conducted in Bikita District on 10% of the sample to ensure clarity, reliability, and validity of instruments (Fiona, 2019). Feedback refined ambiguous questions.

Validity was enhanced through expert review from the Ministry of Water's Project Management Department (Surucu & Maslakci, 2020). Reliability was tested using Cronbach's alpha, with a coefficient threshold of 0.7 indicating strong internal consistency (Shrestha, 2021).

3.6 Data Collection Procedure

The researcher obtained approval from the Catholic University of Eastern Africa (CUEA) and the Gutu Rural District Council. Research assistants were trained to administer questionnaires, while the researcher personally conducted interviews with key informants.

3.7 Data Analysis Procedures

Data analysis involved quantitative and qualitative techniques aligned to research objectives. Quantitative data was processed using SPSS 25 through descriptive statistics (frequencies, means, standard deviations, percentages), while qualitative data was analysed thematically using Nvivo 14. This dual approach facilitated comprehensive interpretation and triangulation of findings (Song, 2021).

3.8 Ethical Considerations

Ethical compliance was ensured through institutional clearance from CUEA. Respondents' informed consent was sought, with assurances of confidentiality, anonymity, and voluntary participation. Participants retained the right

to withdraw at any stage. To uphold academic integrity, sources were properly cited following APA 7th edition guidelines, and a plagiarism check was conducted.

4. Results and Discussion

4.1 Descriptive Statistics on Community Involvement

The study examined community involvement as a predictor of water project sustainability in Gutu Rural District. Six statements derived from the conceptual framework were measured, focusing on the extent of community participation, decision-making inclusion, knowledge of equipment maintenance, rapport with government, role awareness, and the presence of field officers.

Results from Table 1 revealed varying levels of engagement. The highest-rated indicator showed that communities were involved "to the latter" in water projects, with a mean of 3.78 (SD = 1.27), higher than the composite mean of 2.82. This indicates that community members play an active role in sustaining projects once they are established. In contrast, decision-making involvement scored lower, with a mean of 2.56 (SD = 1.28), suggesting limited inclusion in critical project planning stages.

Knowledge gaps were also evident, as many community members lacked awareness of how to maintain water infrastructure (M = 3.39, SD = 1.45). Similarly, role clarity was low (M = 2.77), highlighting the absence of structured community training programs. The weakest aspect concerned field officer support, with respondents strongly indicating insufficient technical guidance (M = 2.11, SD = 1.13).

Table 1: Descriptive Statistics

Indicator of Community Involvement	Mean (M)	Std. Dev. (SD)	Interpretation
Community involvement in sustaining projects	3.78	1.27	High involvement
Knowledge of equipment maintenance	3.39	1.45	Moderate
Awareness of roles in water projects	2.77	1.30	Low
Inclusion in decision-making	2.56	1.28	Low
Rapport with government institutions	2.35	1.19	Low
Presence of field officers	2.11	1.13	Very Low
Composite Mean	**2.82**	–	Moderate involvement

Source: Field data, 2025

Taken together, these findings reveal that while communities are actively engaged in routine project sustenance, deeper involvement in decision-making, technical training, and institutional support remains inadequate.

4.2 Inferential Statistics on Community Involvement and Sustainability

To test the statistical relationship between community involvement and water project sustainability, Pearson's correlation was conducted (Table 4.16). The results showed a strong positive correlation (r = 0.777, p = 0.021), confirming a significant association between the two variables. This implies that higher community involvement translates into greater sustainability of water projects. These findings reject the null hypothesis and reinforce the idea that community ownership and active engagement are indispensable in sustaining rural water infrastructure.

Regression Analysis and Model Summary

Regression analysis was performed to test the predictive strength of community involvement (Table 2). The results revealed that community involvement explained 60.3% (R^2 = 0.603) of the variation in sustainability outcomes. The regression model was statistically significant (F = 0.175, p = 0.021), indicating that community involvement is a valid predictor of water project sustainability in Gutu.
The model equation is expressed as:

Regression Model Summary

Model	R	R^2	Adjusted R^2	Std. Error	F	Sig.
Community Involvement → Sustainability	0.777	0.603	0.598	0.161	0.175	0.021

Source: Field data, 2025

$$\mathbf{Y = 4.140 + 0.226X_1 + \varepsilon}$$

Where:

- **Y** = Sustainability of water projects
- $\mathbf{X_1}$ = Community involvement
- **ε** = Error term

This model suggests that for every unit increase in community involvement, sustainability improves by 0.226 units, holding other factors constant.

Qualitative Evidence from Key Informant Interviews

Qualitative interviews reinforced quantitative findings. Key informants emphasized that community involvement is indispensable for successful water project implementation:

"Community involvement is key in every project since they are the ones on the ground and are capable of doing anything if they are not part of the activities which are being undertaken. They have no right to deny us work in our area. These are words of the key informants who said that foreigners are brought to work on their behalf" (KII Respondent, 30–38).

This perspective highlights frustrations with external actors leading projects without adequate community participation. It further underscores the importance of local ownership to avoid resistance and ensure continuity.

4.3 Discussion of Findings

The study's findings demonstrate that community involvement significantly influences the sustainability of rural water projects in Zimbabwe. Active participation in sustaining infrastructure was confirmed; however, critical gaps remain in decision-making inclusion, technical knowledge, and institutional support.

These findings concur with Herrera (2019), who argues that sustainability requires community ownership from project design to completion. Similarly, Mercader and Brenner (2020) emphasize the need to assess user capacity, readiness, and commitment, which was found lacking in Gutu due to limited training and unclear role assignments.

The results also align with Kwena and Moronge (2015), who observed that participation enhances community understanding and project accountability. In Gutu, respondents acknowledged being involved in maintaining projects but expressed a desire for greater inclusion in strategic planning, echoing the need for participatory monitoring and evaluation.

The positive correlation and regression findings further support Weststrate et al. (2019), who found that community ownership—whether tangible or intangible—fosters long-term sustainability. Likewise, Jadoon (2023) notes that participatory engagement promotes accountability, shared responsibility, and financial contributions, consistent with the present study's conclusion.

However, the findings contradict studies that emphasize the sufficiency of top-down approaches. For instance, some development models assume that technical provision alone guarantees sustainability. In Gutu, respondents strongly disagreed with this notion, pointing out the absence of field officers and external dominance as barriers to effective project outcomes. This divergence underscores the limitations of externally driven interventions that lack adequate grassroots participation.

The study also contributes to contextual debates by showing that while Zimbabwe has national policies promoting community-based management, implementation gaps persist at the district level. The weak presence of field officers mirrors broader governance challenges in rural service delivery (UNICEF, 2021). Furthermore, the finding that many citizens lack technical knowledge suggests a methodological gap in previous training programs, which often prioritize infrastructure provision over capacity building.

In conclusion, the evidence strongly supports the hypothesis that community involvement is a critical determinant of water project sustainability. To achieve long-term success, water projects must institutionalize participatory approaches that include communities not only in maintenance but also in planning, decision-making, and monitoring. Strengthening government-community rapport and enhancing field-level support are essential steps toward achieving sustainable access to safe water in rural Zimbabwe.

5 Conclusion and Recommendations

5.1 Conclusion

The study concludes that community involvement is a critical determinant of water project sustainability in Gutu

Rural District. While communities actively maintain existing infrastructure, they remain excluded from strategic decision-making, lack technical knowledge, and receive minimal institutional support. Statistical analysis confirmed a strong positive relationship, with community involvement explaining 60.3% of sustainability outcomes. Qualitative findings reinforced that exclusion fuels resistance, undermining long-term resilience. Sustainability, therefore, cannot be achieved through infrastructure provision alone; it requires participatory approaches, capacity building, and institutional support that empower communities to co-own and co-manage water resources.

5.2 Recommendations

1. **Inclusive Planning and Decision-Making**
   Government agencies, NGOs, and donors should institutionalize participatory planning forums where communities are actively involved in designing water projects. This will ensure local needs, financial capacities, and priorities are incorporated, strengthening ownership.
2. **Capacity Building and Training**
   Rural District Councils, in collaboration with technical officers, should provide continuous training on equipment maintenance, financial management, and governance. This will address knowledge gaps and enhance local capacity to manage water systems.
3. **Strengthening Institutional Support**
   The Ministry of Lands, Agriculture, Water, and Rural Resettlement should deploy and adequately resource field officers at community level. Their role should extend beyond technical oversight to include facilitation of community-government partnerships.
4. **Participatory Monitoring and Evaluation (PM&E)**
   Donors and implementing agencies should adopt PM&E frameworks that allow communities to assess project performance and sustainability. This promotes accountability, transparency, and shared responsibility in resource management.
5. **Policy Reinforcement and Accountability**
   National policies promoting community-based water management should be operationalized with clear accountability mechanisms at district level. Local leaders should ensure policies are translated into action through enforceable guidelines and community contracts.

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