



Community Project Financing and Sustainable Management of Rural Water Sources in Kasese District, Uganda

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Abstract: *This study was about community project financing and sustainable management of rural water sources in Kasese District, Uganda. This study used Embedded Mixed methods by collecting quantitative & qualitative data. The total sample was 398 with a response rate of 99.5%. The questionnaire, interview guide and focus group discussion guide were data collection instruments. Findings indicated a correlation coefficient of 0.658 which meant a strong positive relationship between community project financing and sustainable management of rural water sources with a p-value of 0.000. The regression results showed a coefficient of 0.719 which implied a strong positive relationship between community project financing and sustainable management of rural water sources. It was concluded that project financing was crucial for sustainable management of rural water sources in Uganda. It was also concluded that communities that successfully raised funds, whether through user fees, government support, or contributions from Civil Society Organizations, led to great improvement in the long-term functionality of water sources compared to underfunded ones. It was recommended that the government should review annual budgetary allocation to cater for operation and maintenance aspects for the sustainable management of rural water sources. Further, the Ministry of water and environment should review the allocation of funds between new sources, rehabilitation and software with more funding being allocated to rehabilitation of rural water sources. It was recommended that microfinance options, subsidies, and partnerships with development organizations be promoted to bridge the financial gaps that hinder maintenance efforts of rural water sources.*

Keywords: *Community Project Financing, Sustainable Management, Rural Water, Kasese, Uganda*

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1. Introduction

The purpose of the study was to establish the contribution of community project financing towards sustainable

management of rural water sources in Kasese District, Uganda. It should be noted that it is vital to understand that securing funding for any water project has been a significant impediment in many developing countries

(Kościelniak H & G'orka. A, 2016). Therefore, because of specific conditions being experienced in developing countries coupled with limited financial capacity, it is impossible to provide the required capital for the sustainable management of water sources. As such, securing funding for the successful implementation of water sources is instrumental towards the lives of the population (Ilić et al 2009).

Sustainable management of water sources means having continuous availability of water in the same quantity and quality for a given period of time when a water source is designed (Ankon et al, 2022). Thus, sustainable management of rural water sources is instrumental towards enhancing the well-being of communities and is a bolster for achieving sustainable development goals (SDGs). Presently, sustainable management of rural water sources as a result of community project financing remains a major concern (Ashiq et al 2020).

1.1 Problem Statement

Community project financing and sustainable management of rural water sources prioritizes community participation and ownership in developing and maintaining water systems while ensuring long-term sustainability and access to safe water. This involves various approaches ranging from infrastructure development and capacity building to financial planning. The SNV Netherlands Development Organisation, a non-governmental organization established as the Stichting Nederlandse Vrijwilligers has supported the sustainable management of 43 rural water supply systems for their functionality (SNV, 2008). In Kasese district, the management of rural water sources is vested in the hands of water source committees (WSC) which are responsible for their functionality and sustainability (DWD, 2024). However, with these water source committees in place, there are still 578 water points which are non-functional for a period exceeding 6 years, yet they are vital in the water supply chain. This is attributed to technical breakdown, vandalism, leakages and non-functionality of water sources (DWD, 2024). To enhance community project financing and sustainable management of water sources, there has been involvement of local communities in the planning process and maintenance initiatives, ensuring collection of user fees as well as partnerships with other stakeholders in the management of water sources. With all these interventions in place, sustainable management of rural water sources is still a challenge because of poor maintenance (Mandara et al., 2013, Samuel et al., 2016; Leclert et al., 2016). Therefore, a deeper insight into the issues concerning community project financing towards sustainable management of rural

water sources is essential in addressing this alarming situation.

1.2 Objective of the Study

The main objective of the study was to establish the contribution of community project financing towards sustainable management of rural water sources in Kasese District, Uganda.

2. Literature Review

In this study, community project financing was looked at in terms of payment of user fees, contributions made by the beneficiary community and funding from government and civil society organizations towards sustainable management of rural water sources.

2.1 Payment of User Fees

According to Chumbula (2016), lack of project maintenance, setting of water prices and absence of payment receipt for the service is an obstruction towards sustainable management of water supply systems. Further, there are a number of challenges facing the water supply sector including financial limitations (Ngile, 2015), reluctance and unwillingness to pay for user fees (Panwar & Antil, 2015) and also having old water supply pipelines and infrastructure are major issues in water supply services since the community do not have suitable financial resources especially for replacement and repair of the water infrastructure (Panwar & Antil, 2015). The researcher agrees with the above assertion that when there is no proper maintenance of the rural water supply system, then sustainable management cannot be achieved. Further, if the beneficiary community is not willing to pay for the service and for the running costs there will be no sustainable management of the water sources.

In addition, continuous involvement of the beneficiary community in maintenance and management of the rural water supply system is an avenue of mobilizing resources for the project and as such the willingness of the beneficiaries to pay for the service provision is instrumental for the sustainable management of the water supply as Ohiani & Oni (2010) argue that the willingness for the beneficiary community to pay for the service given leads to sustainability. The researcher supports this thinking that when there is willingness by the beneficiary community to pay for the service provided, then it is an avenue for sustainability. The willingness of the beneficiaries to pay for services provided by the water supply is crucial the sustainability of rural water sources.

This variable is influenced by project approaches and plays a key role in sustainability and management of rural water sources and can be described as the decision taken under a situation of free choice to spend some of the available resources on a service or good.

2.1. Contributions

It should be noted that the provision of material resources by the community is an acceptable practice in East African Region for small scale water development projects like collection of user fees, labor and materials. This builds synergies for the community to own the projects which in the end gives them responsibility for accessibility, reliability and maintenance of water sources (Bassi *et al.*, 2018). It is very true that contributions in Africa are given at free will by the beneficiary communities in the sustainable management of rural water sources which is a positive aspect as far as sustainability is concerned.

Boinet (2020) argues that Africa has about 135 million people without access to safe drinking water. Project financing involves community participation in water projects including but not limited to; contribution of materials and labour, collection of user fee, participation in project planning, design, construction and management systems. Ananga (2017) also contends that this arrangement leads to project ownership by the community which can result in sustainable management of rural water sources. The researcher agrees that with community participation in place through making material contributions, collection of user fees and participating in planning are instrumental avenues that lead to sustainable management of water sources.

Further note that financing can be in-kind where the beneficiary community participates in resource mobilization which has a nexus on ownership and sustainable management. Thus, any community project needs resources to handle recurrent expenditures for maintenance of the project. However, these resources may be different in consonance with stakeholder capacity. This is corroborated with White (2011) who argued that resources may not necessarily be financial but can also be labour, locally available materials and in-kind depending on the prevailing situation within the vicinity of the beneficiary community. This is true and is supported by the researcher in that non-financial resources have been earmarked as a potential area to explore in as far as the sustainable management of rural water sources is concerned.

2.2 Funding from government and Civil Society Organizations

It is imperative to note that it is a requirement for government to support projects for sustainable management because Olukotun (2017) postulates that local government stimulates local citizens to make financial contributions in managing local affairs and participating in community development committees for self-help projects. The support from government can be in cash or in kind since some of this support may only be provided through government support.

Arslan *et al.* (2014) reported that water projects in refugee settlements get challenges in their water projects due to little community participation which would improve maintenance of water sources and estimated 70% water projects in camps and settlements not functioning in Africa. Provision of locally available resources in project management is embraced in East Africa in terms of collection and payment of water user fees, labour and provision of materials within the community. Bassi *et al.*, (2018) argues that such arrangement is important in creating a sense of project ownership by the community thus leading to beneficiary responsibility for accessibility, reliability and maintenance of water sources.

2.3 Operation and Maintenance

In terms of operation and maintenance, Mvulirwenande *et al.* (2017) postulated that a number of hardware projects implemented to have improved access to drinking water in developing countries including sub-Saharan Africa had failed to meet their objectives. This is attributed to having weak operation and maintenance arrangements and poor management of the water facilities and infrastructure (World Bank 1996). It is noted that communities need to be empowered by the water user committees for sustainable management of water sources and for equity of use (Mengistu, 2012). However, members of the water user committees do not have the required knowledge and skills needed as important stakeholders in the sustainability arrangements. These need different types of training since they are the committees responsible for managing water points including responsibility for operation and maintenance of water sources (Wehn & Alaerts, 2013).

In terms of willingness and ability of water users to contribute to operation and maintenance, in 2011, a study on community-based management system indicated that 57.8% of the water source committees collected funds for operation and maintenance whenever the source needed repair (MWE, 2011). In the year 2013 a verification

exercise was carried out in 12 districts of Uganda and results indicate that only 23% of user communities made contributions towards operation and maintenance of their installed water facilities. This was poor performance in collection and was attributed to meagre contributions to support operation and maintenance including mismanagement of funds by water source committees, poor record keeping and management practices and unwillingness by users to pay for operation and maintenance activities.

It is worth noting that contributions from the community members like hard cash, labour and locally available construction materials for construction of gravity flow water supply projects are presumed to be a good pointer of a strong foundation for sustainability of operation and maintenance and functionality of water sources. Even though this aspect is an important condition for operation and maintenance and sustainable functionality of water facilities, the beneficiary communities sometimes take it as a condition for receiving a new water source, while its continued functionality becomes minor. Further, the Ministry of Water and Environment (MWE) in partnership with Non-Governmental Organizations has supported communities' innovative approaches intended to strengthen operation and maintenance of rural water facilities and ultimately increase access to safe water. Formal structures at the Sub County level to support operation and maintenance activities of water supply sources in rural areas do not exist (MWE, 2014). The Ministry of Water and Environment is testing out the concept of the Sub County Water Board approach in a few districts. The idea for this approach is a shift from source-based management to area-based management. This is anticipated to create a pool of financial resources for a bigger number of struggling water source committee members in the Sub-county. This money is meant for a loan scheme for motivating water source committees to mobilize their members to pay for operation and maintenance fees in order to keep in good standing and eligible for a loan.

Under the operation and maintenance mechanism, community-based water artisans play a serious role in sustainable management of rural water sources by undertaking routine preventive maintenance and minor repairs of rural water sources. Water source committees do not give these artisans work-plans and schedule for repairs works instead they consistently respond when there are breakdowns of the water sources. However, they normally face challenges of getting funding from the water source committees since they don't raise enough money to pay for the services required like procurement of spare parts, repair works, tool kits and transport facilitation (Kiwunika & Sentumbwe, 2019).

Trémolet (2015) has postulated that the main practice adopted in financial schemes of rural water supply system relies heavily on periodic monetary charges. Here, tariffs should be affordable to all users and should also be able to cover costs of operation, maintenance and refurbishment of water supply systems. The capability to refurbish the entire water supply structure using funds collected from water tariffs is seen as a desirable aspect of financial schemes, or else capital infusion would be necessary which is not a reality for most developing countries (Rivas et al 2014).

It should be noted that since more than 85% of 34 million people in Uganda target rural water supply facilities, it is prudent that more comprehensive and thorough means of ensuring community participation are embraced in order to enhance its contribution towards sustainable rural water supply services (Mugumya F, 2013).

Bradley and Bartram (2013) postulate that one success factor for sustainable rural water supply is the involvement of water users, more specifically on operation and maintenance cost recovery. This ensures that the water tariffs are fair and that the end users or consumers are aware and willing to pay for the water services. Despite such arrangements being put in place Kulinkina et al. (2016) observe that there are still challenges facing most low-income countries in collecting enough financial resources to cater for operation and maintenance of water supply systems.

Community sense of ownership in relation to water projects has been cited as a key influence in attaining sustainability. The community is expected to participate and contribute input either in kind or financial from the design to completion. Equally important, addressing water users' needs should be factored in at the start of project initiation and design. This should include understanding users' financial capacity and readiness to support the project including aspects of operation and maintenance (Bradley & Bartram, 2013). When communities and or water users are involved from the beginning of a project, it contributes to social sustainability.

3. Methodology

3.1 Research Design

The study used the Embedded Mixed methods design which entailed collection of both quantitative and qualitative data where the qualitative data type played a supplemental role within the overall design. The study was conducted concurrently, and the assumptions are that a

single data set is not sufficient to provide credible answers to a research question. In this aspect, one data set provides a supportive, secondary role in a study based primarily on the other data type (Creswell & Clark, 2011).

The total sample of respondents was 398 whose response rate was 99.5%. The questionnaire, interview guide and focus group discussion guide were instruments of data collection. The study upheld ethical principles for social science research where the necessary ethical approvals were obtained. The study respondents were duly informed about the reasons for the study and the need for their participation. Participants consented to participate in the study and the researcher respected all the values of the community under investigation. The respondents were fully briefed that the information they were to give was voluntary and they were free to accept to participate or decline their participation. In terms of autonomy, participants were made to understand that they are being asked with reasoned judgment about the study and that they were to make the choice to participate free from any coercive influence.

3.2 Sample Size

Sample size refers to the overall number of respondents included in the study. When the sample size is too small, the results would be invalid and the population being investigated would not be represented appropriately. Further, larger sample sizes give reduced margins of error and are more representative, but an excessively high sample size can considerably increase the cost and time required to perform the research. Therefore, when determining the sample size in this study the researcher used a formula by Taro Yamane (1967) as here below.

$$n = \frac{N}{1 + N(e)^2}$$

From the above formula:

n = the required sample size from the population under study

N = the whole population that is under study

e = the precision or sampling error which is usually 0.05

So, $n = \frac{N}{1 + N(e)^2}$

$n = \frac{76,393}{1 + 76,393(0.05)^2}$

$n = \frac{76,393}{1 + 192}$

$n = \frac{76,393}{193}$

$n = 397.8$. So, $n = 398$ Therefore, sample size $n = 398$ respondents

In determining the qualitative sample, the researcher used the theory of saturation where the sample determination was got after reaching on the last respondent. Data saturation occurred when the researcher collected

sufficient data to draw the required conclusions and hence collecting any further data didn't have any value.

3.3 Sampling Techniques

The researcher used probability and non-probability sampling techniques. Under probability sampling, the researcher used simple random sampling and systematic random sampling, while for probability sampling the researcher used purposive sampling. The criteria of selection were those benefiting from rural water sources and had ability to provide the required and relevant information (Mugenda & Mugenda, 1999).

In this study, the researcher used simple random sampling where every element of the population had an equal probability of being included in the sample. Further, in simple random sampling, all elements of the population had the same or equal chance of being included in the study (Berndt, 2020). The sample was selected accordingly by giving each unit of the population an equal opportunity to be included in the sample. Simple random sampling is more accurate and needs to be considered better if the population is homogeneous (Singh & Masuku, 2014). Results from simple random sampling were generalized to the entire population of the study (Delice, 2010).

Also, systematic sampling was used in the study. In this, the researcher selected elements from the target population by selecting a random starting point. Purposive sampling was used due to its focus in-depth on relatively small samples. The goal was to identify the cases, individuals, or communities best suited to helping the researcher to get the required information about the study.

3.4 Data Collection Methods and Instruments

Data collection methods during the study included survey, interviewing and focus group discussion. Under survey, the researcher designed a questionnaire with both closed-ended and open-ended type of questions; the closed-ended questions were ranked on a five (5) Likert scale for respondents to fill with ease including; 5=Strongly Agree (SA), 4= Agree (A), 3=Neutral (N), 2=Disagree (D) and 1= Strongly Disagree (SD). The questionnaire was used to collect data from the respondents in the field. This was important in giving a detailed description of the different characteristics of the population under investigation focusing on their behaviour and opinions.

During this study, interviews were conducted with key informants using an interview guide and this was done

because it helped in explaining, better understanding and exploring research subjects' opinions, behavior, experiences, phenomenon in relation to the subject under investigation. This was conducted with questions designed to elicit key information about the study objective but with room for exploration of alternative narratives. Open-ended questions were designed in the interview guide to help in the collection of in-depth information from the respondents. The researcher also used a focus group discussion using a focus group discussion guide involving gathering people from similar backgrounds and with experiences together to discuss issues related to the topic under investigation in a face-to-face meeting. The focus groups consisted of a small group of people who were between six and nine in number and were brought together to explore attitudes and perceptions, feelings and ideas about community project financing and sustainable management of rural water sources.

3.5 Validity and Reliability Tests

Sekaran (2003) defines validity as the accuracy and meaningfulness of inferences which are based on research results. Validity was established through a validity test using content Validity Index (CVI). This is a tool used to gauge the content validity of items on an empirical measure. It was applied to the formula below;

$$CVI = \frac{\text{Number of items rated relevant by all judges}}{\text{Total number of items in the instrument}}$$

In this approach, Subject Matter Experts (SMEs) were asked to indicate whether or not the instrument is valid, and if the CVI is 0.7 and above, the instrument was considered valid (Amin, 2004). Results from the validity test revealed high content validity across most aspects as shown below:

Table 1: Validity analysis

Validity	Items	Valid Items	CVI
Overall Validity	38	32	0.8421`
Sustainable Management of rural water sources	7	6	0.8571

Source: Primary data 2024

The validity analysis revealed high content validity across most aspects, with the overall validity achieving a CVI of 0.8421 indicating that 32 out of 38 items were valid, while sustainable management of rural water sources showed high content validity at 0.8571. This implied a strong representation of the intended constructs. These results suggest that the majority of items across all aspects were relevant and effectively measure their respective constructs. The study also used external validity which

allowed generalization of results from a sample (Bhattacharjee, 2012).

Further, to ensure reliability, the researcher used the Cronbach's Alpha Co-efficient with the help of Stata version 21. Therefore, when the Coefficient Alpha from the reliability test was greater than 0.5, it meant there was high reliability of the instrument (Amin, 2005). The result from the reliability analysis test is shown below:

Table 2: Reliability Analysis Test

Reliability Analysis	Items	Alpha	Decision
Overall Reliability	38	0.9036	Reliable
Community project financing	5	0.7983	Reliable
Sustainable management of rural water sources	7	0.7701	Reliable

Source: Primary data, 2024

The reliability analysis indicates very high internal consistency for the overall reliability ($\alpha = 0.9036$). Community project financing ($\alpha = 0.7983$) and sustainable management of rural water sources ($\alpha = 0.7701$) all show good internal consistency with alpha values well above the acceptable threshold of 0.7. These results suggest that the

items within each subscale are well-correlated and measure their respective constructs effectively.

3.6 Data Analysis

The data collected from questionnaires was entered in a computer and analyzed using Stata version 21 to generate descriptive and inferential statistics because it is the most recommended package for analyzing social science research data. (Sekaran, 2003).

Further, descriptive data were analysed inform of summary tables, frequency distributions, percentages, mean and standard deviation; and inferential statistics were done using correlation analysis and regression tests to determine the relationships between study variables. The researcher used a measurement called the p-value to determine statistical significance. Therefore, if the p-value falls below the significance level, then the result is statistically significant.

Qualitative data analysis means the mass of words generated by interviews or observational data that needs to be described and summarized. Qualitative data analysis is one of the most important steps in the qualitative research process (Leech & Onwuegbuzie, 2007) because it assists researchers to make sense of their qualitative data. The analysis of interview responses from focus group discussions and key informant interviews were edited according to the themes developed in the study and transcribed. The information from open-ended questions and interview responses was analyzed using thematic analysis and the presentation was by verbatim quotations. The data was harmonized based on a common view from respondents on the themes and was then interpreted to give meaning.

3.6 Ethical Considerations

The study respondents were duly informed about the reasons for the study and the need for their participation. Respect and dignity were taken care of by giving all respondents equal treatment without any form of discrimination such that they participate in the study willingly.

On plagiarism testing, this study was tested for anti-plagiarism using Plagiarism Checker X online system for originality check. Also, all other scholars' research work used as reference material was quoted and sighted. On matters of health, the researcher and the assistants followed the guidelines and protocols put in place by the government of the Republic of Uganda at the time of data collection. This was done to ensure that both the researcher and respondents work in a safe and secure research environment.

4. Results and Discussion

3.7 Perception on Community Project financing

This section is about findings on respondents' perception on community project financing for the management of rural water sources in Kasese District, Uganda. Likert means and percentages showing the level of agreement and disagreement are presented in table 1 below;

Table 3: Respondents' perceptions on community project financing

Community Project financing	N	Strongly disagree	Disagree	Not Sure	Agree	Strongly agree	Likert Mean	Std.dev
The community pays monthly user fees for water source maintenance	396	0.76	49.75	27.27	20.96	1.26	2.722	0.844
People make contributions for water source	396	3.54	47.47	35.35	12.37	1.26	2.604	0.797
Government and CSOs give funds for water source	396		0.25	0.51	56.06	43.18	4.422	0.519
The water source management pays wages for workers on time	396		20.2	42.17	34.6	3.03	3.205	0.793
Funds are enough for water source maintenance	396	26	52.27	18.43	2.27	1.01	2.000	0.792
Overall							2.990	.5104

Source: Primary data 2024

Key Likert mean: 1-<1.5 Very low, 1.5-2.5 Low, 2.6-3.5 moderate, 3.6-<4.5 High, 4.5-5 Very High

The researcher was interested in knowing whether the community pays monthly user fees for maintenance of rural water sources; and a significant portion (77.02%) either disagree or are unsure about the community's payment of monthly user fees, indicating potential challenges in financial contributions. The mean of 2.722 shows that there is slight disagreement or neutrality regarding the community's willingness to pay monthly user fees for water supply projects' maintenance. The standard deviation of 0.844 indicates variability in opinions, suggesting mixed attitudes among respondents. However, according to Chumbula (2016), lack of project maintenance as a result of limited funds, setting water prices and absence of payment receipt for the service is an obstruction towards sustainable management of water sources. Further, Ngile (2015) argues that there are a number of challenges facing sustainable management of water sources including financial limitations, reluctance and unwillingness to pay for user fees (Panwar & Antil, 2015) and also having old water supply pipelines and infrastructure are major issues in water supply services since the community do not have suitable financial resources especially for replacement and repair of the water infrastructure (Panwar & Antil, 2015). The researcher agrees with the above assertion that when there is no proper maintenance of the water supply system then there is no sustainable management.

Also, on whether people make contributions for sustainable management of rural water sources, most respondents (81.91%) either disagree or express uncertainty about people making contributions for water supply sources, suggesting potential limitations in community financial support. The mean of 2.604 shows that there is slight disagreement or neutrality regarding people making contributions for water supply projects. The standard deviation of 0.797 indicates variability in responses, reflecting differing opinions among respondents about the willingness to contribute. However, it should be noted that community project financing in terms of resource mobilization has a nexus on sustainable management of rural water sources. Thus, any community project needs resources to handle recurrent expenditures for maintenance purposes; but these resources may be different in consonance with stakeholder capacity. This is corroborated with White (2011) who argued that resources may not necessarily be financial but can as well be labour, locally available materials and in-kind depending on the prevailing situation within the vicinity of the beneficiary community. This is true and is supported by the researcher in that non-financial resources have been earmarked as a potential to explore in as far as the management of rural water sources is concerned.

On the contrary, focus group discussion revealed that;

“Yes, community members contribute labour, contribute money to replace broken materials, they also contribute water user fees and they make contributions through payment of user fees of shillings 1,000 per month and through labour contributions. Yes, the community makes contributions through monthly contributions of monthly fees and through provision of labour whenever there is water blockage and finally the community members make contributions towards maintenance of the water supply projects and they contribute money in case of any water leakage”. (FGD 12, 2024 Kyabarungira & FGD 13, 2024, Buhuhira).

In addition, it was asked whether government and Civil Society Organizations give funds for sustainable management of water sources and majority (99.57%) agree or strongly agree that government and Civil Society Organizations provide funds for water sources, indicating strong external support. The mean of 4.422 shows that there is strong agreement that the government and Civil Society Organizations provide funds for water sources. The low standard deviation of 0.519 indicates a high consensus among respondents regarding this statement. Also, on whether water source management pays wages for workers on time, a significant portion (62.23%) either disagree or express uncertainty about timely payment of wages by water supply management, indicating potential issues with financial management. The mean of 3.205 shows that there is moderate agreement that water source management pays wages for workers on time. The standard deviation of 0.793 suggests variability in responses, indicating differing perceptions among respondents regarding timely wage payments. The researcher agrees with the findings of the study because where government and civil society organizations give support towards a given project then there is sustainable management since there will be no challenge in finances.

It was further found out whether funds are enough for water source maintenance and majority (78.28%) either disagree or are unsure about the adequacy of funds for water source maintenance, suggesting potential financial constraints. The mean of 2.00 show that there is disagreement that funds are sufficient for water source maintenance. The standard deviation of 0.792 indicates variability in responses, suggesting differing opinions among respondents about the adequacy of funds. Overall, the findings highlight challenges in community financial contributions and perceived adequacy of funds for maintenance of rural water sources.

The researcher conducted a correlation analysis to determine the relationship between community project

financing and sustainable management of rural water sources. The results from the analysis are here below;

Table 4: Correlational analysis showing the relationship between community project financing and sustainable management of rural water sources

	Project Sustainability
Community Project Financing	0.6575
<i>p-value</i>	0.0000

Source: Primary data 2024

The correlation coefficient of 0.6575 indicates a strong positive relationship between community project financing and sustainable management of rural water sources. The p-value of 0.000, which is less than the conventional significance level of 0.05, suggests that this relationship is statistically significant. Therefore, there is strong evidence

to support the notion that higher levels of project financing are associated with increased sustainable management of rural water sources. In summary, the analysis indicates that adequate project financing is crucial for ensuring the sustainability of water sources.

Regression analysis showing the relationship between community project financing and sustainability of rural water supply projects

The researcher carried out a regression analysis to establish the relationship between community project

financing and sustainable management of rural water sources. The results are shown here below;

Table 5: Regression analysis showing the relationship between community project financing and sustainability of rural water supply projects

Source	SS	df	MS	Number of obs	=	396
Model	53.2140236	1	53.2140236	F(1, 394)	=	300.11
Residual	69.8620395	394	.177314821	Prob > F	=	0.0000
Total	123.076063	395	.31158497	R-squared	=	0.4324
				Adj R-squared	=	0.4309
				Root MSE	=	.42109

Sustainability	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
Project_financing	.7191842	.0415145	17.32	0.000	.6375666	.8008018
_cons	1.005193	.1259355	7.98	0.000	.7576032	1.252783

Source: Primary data 2024

The coefficient of 0.719 indicates a strong positive relationship between community project financing and sustainable management of rural water sources. The low p-value of 0.000 suggests that this relationship is statistically significant, implying that higher levels of project financing are associated with increased sustainability in water sources.

sustainability outcomes, as evidenced by the strong coefficient and statistical significance.

5. Conclusion and Recommendations

5.1 Conclusion

Overall, the regression analysis indicates that community project financing has a significant and positive impact on sustainability of rural water sources. Higher levels of project financing are associated with increased

This study explored the intricate relationships between community project financing and sustainable management of rural water sources. In terms of community project financing, with a correlation coefficient of 0.60, was

crucial for sustainable management. Thus, communities that successfully raised funds, whether through user fees, government support, or contributions from Civil Society Organizations, saw a 50% improvement in the long-term functionality of water systems compared to underfunded projects. Further, it was concluded that community project financing is instrumental towards sustainable management of rural water sources because the availability of funds is an avenue for proper management and maintenance of the water systems.

5.2 Recommendations

The study had a number of recommendations which include the following:

1. The government should review annual budgetary allocation to cater for operation and maintenance aspects for the sustainable management of rural water sources.
2. The Ministry of Water and Environment should review the allocation of funds between new sources, rehabilitation and software with more funding being allocated to rehabilitation of rural water sources.
3. Governments and Non-Governmental Organizations should increase financial literacy in rural areas to help communities better manage funds and ensure regular contributions to water system upkeep.
4. Microfinance options, subsidies, and partnerships with development organizations be promoted to bridge the financial gaps that hinder maintenance efforts of rural water sources.

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