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Community participation and sustainability of water and sanitation projects in South Sudan: A case study of Yei River County.

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Abstract:
The sustainability of water and sanitation project was a key worry because less and fewer projects are being funded. In light of this, the study's objective was to investigate how community participation influences the sustainability of water and sanitation projects in South Sudan's Yei River County. The research focused on the following independent variables: community participation in decision-making, institutional collaboration and resource mobilization in order to achieve the study's objectives. Additionally, it looked at how these factors affected the sustainability of water and sanitation, which was the dependent variable. The study set out to achieve the specific aims listed below. Find out how community participation in decision-making affects the sustainability of water and sanitation projects in Yei River County, South Sudan.To assess the impact of institutional cooperation on the sustainability of water and sanitation projects in Yei River County, South Sudan.To evaluate how asset mobilization affects the ability of water and sanitation projects to be maintained in Yei River County, South Sudan. In order to gather primary data from respondents, the study used both qualitative and quantitative data gathering techniques. 384 respondents were chosen as a sample using Fischer's (1998) formula. To choose interviewees, simple random selection was utilized. Collected data was analyses using SPSS version 23. The outcome of this research would be use by policymakers as a guide in their planning for clean water and sanitation projects. Most importantly, the study would help to inform and advise decision-makers on why water and sanitation projects need to be fundamentally redesigned to engage communities. The study was supported by a literature review were many studies on the sustainability of water supply and sanitation projects have been carried out.In SPSS software version 23, a linear regression model was used to examine quantitative data. The study found that community participation in institutional collaboration, decision-making significantly influenced, the sustainability of water and sanitation project at the 5% level of significance (p 0.05). There was no significant influence of resource mobilization. The degree of project sustainability was positively connected with the participation's strength, which increased from weak to moderate to strong.According to the study's findings, community involvement in decision-making, resource mobilization, and institutional collaboration all had a significant individual and combined impact on the viability of water and sanitation initiatives. Sustenance increased as their level increased. The research advises that in order to maintain project sustainability, community water and sanitation programs should ensure that project beneficiaries are included in all stages of the project. In order for projects to meet industry standards and regulations and be eligible for funding from a range of institutions, project beneficiaries must contribute both the project's initial money as well as a monthly fee for operation and maintenance. Future research should examine how institutional collaboration in water and sanitation services has been impacted by the devolution of water services, the impact of co-management on project performance, and how communities can use appropriate technologies like rainwater harvesting to develop community water and sanitation systems.

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I. Introduction.

For any organization's project to succeed, participation of communities is one aspect that cannot be overlooked (Moodley, 2012.participation of stakeholders can take place at different levels of a project this includes decision making, Resource collection and collaboration with other external agents (Mitchell, Agle, & Wood, 2017.Therefore, Community participation is a socialprocess whereby specific groups with shared needs, often but not always living in adefined geographical area, actively pursue identification of their needs, make decision, collect resource and collaborate with other institutions inorder to establish mechanism to meet these

needs (Ofuoku, 2011 & Sonowabo, 2019).According to Hodgkin (2014), a water and sanitation project's sustainability is determined by its capacity to maintain or extend the stream of benefits at a specified level for a considerable amount of time after its input has ended. Additionally, he clarified that for the definition to be accurate, sustainability must take into account more than simply a project's capacity to deliver services; it must also take into account the caliber of those services. Based on this, Sara and Katz (2017) describe water and sanitation sustainability as a system that can provide the necessary sanitary and water supply services for a considerable amount of time.

Therefore, the sustainability of water and sanitation projects is a major worry because fewer and fewer water and sanitation projects are being maintained, which suggests that the benefits they provide are not justified by the costs incurred (UNDP,2019). According to a report released by WHO and UNICEF in 2017, 2.1 billion people worldwide do not have access to safe, easily available water at home, and 4.5 billion do not have access to properly managed sanitation. An evaluation of the water pipes in 120 villages in Bangladesh by the Department of Public Health Engineering and JICA found that 52% of the pipes were inoperable. The investigation came to the conclusion that the sustainability of the village's water, sanitation, and hygiene fades in spite of the technical solutions implemented (DPHE and JICA, 2018). According to Bentley, Han, and Houessou (2015), between 30% and 60% of Africa's water systems were inoperable at any given moment, with 44% of the continent's population lacking access to piped water. For instance, 50% of Malawi's rural piped water schemes, which ranged in age from 3 to 26 years, had subpar performance. The lack of community involvement in project decision-making, resource mobilization, and institutional collaboration were some of the factors causing these systems to fail. Communities sometimes lack a sense of ownership when these water projects fail or are simply abandoned, especially when the infrastructure was created without much of their input. Hope & Rouse (2013). In Ghana, officials made an effort to address the issues of access to water and project sustainability by appointing community sanitation experts in a decentralized system in which neighborhoods drilled boreholes and outfitted them with manually operated pumps. In any event, the pumps frequently failed quickly, forcing the towns to return to their regular water supplies (Carter, 2019). Solar water pumps are offered to some communities' residents, although they are likewise not particularly dependable. Compared to North Africa, where just 16% of the countries lacked access to clean water, East Africa had a prevalence of 61%. (Bentley, Han & Houessou, 2015). 56% of Kenyans who live in rural regions lack access to better water sources. According to a report from the Lake Victoria South Water Service Board (LVSWSB, 2017), Siaya County, which has 89.2% rural population, only has 6% of its residents have access to clean water, which is much less than the country's average (Ornit,2019).

South Sudan like any other Country in East Africa, has about five hundred water and sanitation projects that granted over 740,000 households with water at some point in the country. In any case, large parts of them are no longer working due to terrible administration and need for protection (South Sudan file 2017). The Annual performance report presented by Amref Health Africa (2021) indicated that access to water supply and sanitation administration in South Sudan remains at 24 % with expansive incongruities among geographic regions. The report demonstrated that Western Equatoria states has less than 10% accessibility to safe water supply and sanitation services as compared to 50% within Juba County. Therefore, within Yei County there is still a gap in water supply and sanitation services with some Payams having performance of 64 % whereas others have as low as 10%, even though there are many Humanitarian agencies implementing water and sanitation projects via drilling of modern water points and restoration of current water sources, building of sanitation services. (AMREF ,2021). These observations require answers as to why water projects continue to "die" in South Sudan despite policy reforms in the country and massive investments made by donors to support water supply and sanitation services in the country. Therefore, this research targets at analyzing the influence of community participation on sustainability of water and sanitation projects in Yei River County, South Sudan.

Problem statement.

According to UNDP, 2019, the sustainability of water and sanitation project is a big concern as fewer and fewer water and sanitation projects are being maintained. The approaches employed for water supply systems have an inclusive stance and acknowledge water as a financial good. Consequently, a lot of decision-makers and developers have accepted a strategy for water supply and sanitation based on a concept of community-based service delivery (Mansuri and Rao, 2014). Water and sanitation projects have increased access globally over time, but there are still significant differences between regions and nations (Brikké, Francois, and Rojas, J. (2011). Currently, just 50% of people in sub-Saharan Africa had access to modern sanitation and water systems, compared to 90% or more in the Caribbean, Latin America, North Africa, and significant areas of Asia. (Carter (2011). The low sustainability of a water and sanitation framework, which demonstrates that 36% of water and sanitation projects are not available at any point in time, contributes to the inadequate access to water and sanitation services in sub-Saharan Africa (IEA, 2016). The comprehensive policy changes that the South Sudanese government put into place in 2012 are detailed in the Water and

Sanitation Act from that year. The policy's objective was to encourage Monitoring and Evaluation methodologies as a cutting-edge approach to addressing the sustainability issue in community-based water and sanitation projects. According to Amref Health Africa's Annual Performance Report (2021), access to water supply and sanitation administration in South Sudan remains at 24%, with significant regional disparities. According to the survey, only 10% of the states in Western Equatoria have access to clean water and sanitary facilities, compared to 50% in Juba County.As a result, there is still a disparity in water supply and sanitation services within YeiRiver County, with certain Payams performing at 64% while others only at 10%. These observations call for explanations as to why water projects in South Sudan and Yei County in particular continue to "die" in spite of policy changes and significant donations from donors to assist the country's water supply and sanitation services. However, no significant effort has been made to assess the impact of community involvement and the sustainability of South Sudan's water supply and sanitation administration, notably in Yei River County. It is imperative to undertake a study on community participation and sustainability of the water supply and sanitation initiatives in order to close the information gap. In this regard, a project to provide water and sanitation in Yei River County, South Sudan, was investigated to determine the impact of community involvement in project sustainability.

Purpose of the study.The general purpose of the study is to determine the Influence of community participation on the sustainability of water supply and sanitation projects in Yei River County, South Sudan.

Objectives of the study.

I. Find out how community participation decision-making affects the sustainability of water and sanitation projects in Yei River County, South Sudan.
II. To evaluate the effect of community participation in institutional collaboration on the sustainability of water and sanitation projects in Yei River County, South Sudan.
III. To assess how Community participation in Resource mobilization influences the sustainability of a water and sanitation project in Yei River County, South Sudan.

II Literature.

Systems Theory. This theory was first formulated by Ludwig von Berlanffy (2008) and then enhanced by Daniel Katz and Robert Kahn (2016). This theory implies that gender could be understood in form of different interactions that have inheritance of properties attributed to the whole compared to the properties of the components. Integrity of water supply and sanitation projects can ensure project sustainability. This can be accomplished through the interaction of various stakeholders, including resource mobilization, institutional cooperation, and community involvement in decision-making.

Social learning theory. According to Argyris and Schon, the findings of the social learning theory are thought to affect both social and decision-making outcomes (2018).This will lead to the creation of unused information and social aptitude as well as changes in recognition and state of mind by sharing and reflecting on encounters, thoughts and valves with others, people can change them, in this way giving the premise for a common understanding of the frame work or issue to be fathomed that permits a bunch of performing artist to concur and choose on collective activities based on common understanding of the circumstances (Senge, 2015).

III. Methodology.

Study design. Mixed method, where both qualitative and quantitative data collection approached.

Study area. Yei river County South Sudan.

Target population.46,000 people living in Yei town.

Sampling procedure. Information were gathered from three strata: water and sanitation personnel, members of the water management committee, and water and sanitation customers. Water and sanitation officials who worked for water sources made up the first layer. The respondents in this stratum were chosen on purpose from a census of all the water and sanitation officers. The researcher gathered information from this group using a key informant interview guide. Three members of the water management committee and five members of the public made up the second stratum. The two groups were combined to create an eight-person focus group (FGD). Both simple random sample and purposeful sampling were used to choose the participants in this category. The chairman, treasurer, and general secretary of the water management committee were chosen as responders, and five members of the community were chosen using simple random sampling. A purposive sampling technique was employed to collect data from the other three committee members. By applying the Fischer (1998) formula to the entire beneficiary group, 294 respondents from the third stratum were produced.Information in this group was obtained using structured questionnaires.

Sample size.384 respondents using fishers formular.
Data collection method. Questionnaires were used for data collection.
Data analysis. Statistical Packages for Social Science (SPSS Version 23) was used to analyze quantitative data using frequencies and percentages in a descriptive and inferential manner using linear regression analysis, while qualitative data were analyzed thematically in accordance with the study objectives and were presented in a narrative format. The link between the study's independent and dependent variables was ascertained using bivariant analysis.

IV. Results.

Demographic information. The Majority of the participants (196) were female accounting for 66.6 percent of participation while only 98 males participated in the study accounting for 33.4 percent. The age of the participants ranged from 18 years to 56 years and above. For those whose aged was 18-25 were 65 representing 22.1 percent, 26-35 were 129 representing 43.8 percent, 36-45 were 47 representing 15.7 percent, 46-55 were 32 representing 10.8 percent and only 21 were aged 56 years and above representing a percentage of 7.1 percent. Out of 294 participants only 12 had reached university accounting for only 4.1%, 84 stopped at secondary level giving a percentage of 28.5 percent. However, a greater percentage of the participants stopped at primary education level (132) with a percentage of 44.8 percent and for those who never went to school were 66 accounting for 22.4 percent. The author of the study findings also pointed out a significant low occupation levels and as indicated only 7.4 percent of the participants were employed while others were either farmer (57.1%), casual labourers (12.5%), doing business (14.9%) and others (8.5%). The research, therefore, conclude that this community of Yei River County was a typical rural community as depicted by the findings.
Community participation in decision making. One of the specific objectives of the study was to assess the level of community participation in decision making. The results clearly shows that there is a considerable involvement of the community in decision making. 82.3% of the respondents said their households were informed about the water and sanitation project, 93.7% stated that their HHs participated in planning of water supply and sanitation project, 58.9% conformed their attendance for meetings, 84.9% said that community individuals had control over key water and sanitation ventures, 82.0% said that community members had control over the selection of the project board members.

Table 1. Bivariate analysis between community participation in decision making and project sustainability.

			Community participates in decision making and sustainability.			P-value Sig.(2-sided)
			Yes	No	Total	
Community participates indecision making	Yes	Count	190	92	282	0.000
		% of Total	64.6%	31.3%	95.9%	
	No	Count	0	12	12	
		% of Total	0.0%	4.1%	4.1%	
Total		Count	190	104	294	
		% of Total	64.6%	35.4%	100.0%	

Bivariate analysis was employed to ascertain the connection between community participation in decision-making and the sustainability of water and sanitation. Alpha 0.05 was used to determine the degree of significance. A statistically significant correlation was one with a p value of less than 0.05. As shown by the findings in table 1 above, community involvement in decision-making and sustainability were significantly correlated, with a p value of 0.000 being less than 0.05. We may draw the conclusion that community involvement in decision-making affects the likelihood that the water and sanitation project in Yei River County will be sustained.
Community participation in institutional collaboration. Results indicate that Community water and sanitation projects did not collaborate with other institutions in sourcing of project finances (51.3%) and in infrastructural development / in sourcing materials for expansion (53.4%). However, Community water and sanitation projects collaborated with other institutions in the provision of technical and extension services (52.1%), collaborated with

other institutions in conducting research/surveys (70.6%), collaborates with other institutions in capacity building (65.6%).

Table 2. Bivariate analysis between community participation in institutional collaboration and project sustainability**.**

			Sustainability of water and sanitation.			P value
			Yes	No	Total	Sig. (2-Sised)
Community participation in institutional collaboration	Yes	Count	204	28	232	0.000
		% of Total	69.4%	9.5%	78.9%	
	No	Count	0	62	62	
		% of Total	0.0%	21.1%	21.1%	
Total		Count	204	180	294	
		% of Total	69.4%	30.6%	100.0%	

To determine the relationship between community participation in institutional collaboration and project sustainability, bivariate analysis was used. Alpha 0.05 was used to determine the degree of significance. A statistically significant correlation was one with a p value of less than 0.05. Since the p value was 0.000 less than 0.05, as shown in table 2 above the relationship between community participation in institutional collaboration and project sustainability was statistically significant. We can consequently draw the conclusion that institutional involvement with the community has a major effect on project sustainability.

community participation in resource mobilization.

When the households were asked if most of the assets for the operation and upkeep of their water and sanitation project comes from the community.19.5% strongly agree,14.1% agree,15.6% disagree and 44% strongly disagree. Communities were asked if they were willing to contribute resources for the construction of their water and sanitation project.70% strongly agree,19% agree,2% disagree and 6.5% strongly disagree. The households were asked if they authorised the construction of water and sanitation project on their land.15.9% strongly agree,6.3% agree,9.4% disagree and 65.9% strongly disagree. Households were asked if they help to mobilised project documents from other stakeholders for their water and sanitation project.7.3% strongly agree,18.5% agree,19.4% disagree and 59.4% strongly disagree. When households were asked if they secure funding from other stakeholders for their water and sanitation project.9.1% strongly agree,12.5% agree, 13% disagree and 62.8% strongly disagree. The households were also asked if they provide documentation for their water and sanitation project.14.3% strongly agree,13.5% agree,12% disagree and 54.2 strongly disagree. The households were also interviewed if they made monetary commitment to their water and sanitation project.42.7% strongly agree,11.2% agree,12.8 %disagree and 32% strongly disagree. They were asked if they really made financial contribution to their water and sanitation project. 60.4% strongly agree,9.1 agree, and 29.2 % strongly disagree. The household were asked if they provide physical labour to their water and sanitation project.65.9% strongly agree,18.8% agree,2% disagree and 9.4% strongly disagree.

Table 3. Bivariate analysis of the relationship between community participation in resource mobilization and project sustainability**.**

			Community participates in resource mobilisation			P value
			Yes	No	Total	Sig. (2-Sided)
Water facility working (maintainability)	Yes	Count	171	172	343	0.742
		% of Total	44.5%	44.8%	89.3%	
	No	Count	19	22	41	
		% of Total	4.9%	5.7%	10.7%	
Total		Count	190	194	384	
		% of Total	49.5%	50.5%	100.0%	

Bivariate analysis was performed to ascertain the associated between Community resource Mobilization and sustainability of water and sanitation project.Alpha 0.05 was used to determine the degree of significance. A p- value of 0.05 or below indicates a correlation that is statistically significant. The ability of the project to be sustained cannot be inferred from the mobilization of community resources because the p value of

0.742 is more than 0.05. Therefore, we draw the conclusion that mobilizing community resources does not significantly influence project sustainability in Yei River County.

V. Conclusion.

Community participation in decision making and institutional collaboration significantly influence sustainability of water and sanitation project because the p value is less than 0.05. However, community participation in resource mobilization doesn't significantly influence sustainability of water and sanitation project in Yei River County because the p value of 0.74 is greater than 0.05.

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