



Factors affecting financing of communal sanitation facilities by the public sector in Informal Settlements: A case of Nyalenda informal settlement, Kisumu City

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ABSTRACT

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To close the current sanitation gap, public funding for sanitation has become increasingly insufficient, particularly in Sub-Saharan Africa. What is concerning in Kenya is not the large number of people who lack access to safe sanitation facilities, but the slow rate at which households can gain access to improved sanitation facilities. A sustainable financing strategy is required, one that will increase resource allocations to the sector, improve the efficiency and effectiveness of existing resources wherever they are found, and tap the potential of alternative financing mechanism.

A critical review of policy documents like the County Integrated Development Plan (CIDP) shows that there is hardly any documentation on County sanitation plans. Once sanitation lacks in the CIDP, the county can hardly plan for the sector hence making the residents suffer. The study objectives are to examine different sanitation financing options for communal sanitation facilities in Nyalenda informal settlement, to assess factors affecting financing of communal sanitation facilities by public sector in Nyalenda informal settlement and to establish challenges of financing communal sanitation facilities in Nyalenda informal settlement. The study is a descriptive cross-section design. The study used closed and open-ended questionnaires and key informants' interview in collection of data where n=400. The study established that the dominant communal sanitation financing option in Nyalenda informal settlement was personal contribution (56.0%), followed by NGO financing (40.3%), while the last was County Government financing (0.5%). Public-private partnerships played a crucial role in facilitating sustainable onsite financing for sanitation facilities as evidenced by majority of the respondents agreeing (35.75%). The study recommended the need for diverse financing sources, awareness of available options, and supportive policies to overcome financial challenges

Introduction

Globally, approximately 2.6 billion people lack access to improved sanitation, and the resulting diarrhea kills at least 1.2 million children under the age of five each year (World Health Organization & United Nations Children's Fund (UNICEF),

2013). Poor sanitation results in economic losses due to the direct costs of treating sanitation-related illnesses as well as lost income due to reduced or lost productivity (Economic Cost of Inadequate Water and Sanitation, South Tarawa, Kiribati, 2014). To close the current sanitation gap,

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public funding for sanitation has become increasingly insufficient, particularly in Sub-Saharan Africa (Tseole et al., 2022). According to Tseole et al., (2022), leveraging household and market-based resources to invest in sanitation improvements is a promising measure. According to the argument, private funding for sanitation should be increased (Pories et al., 2019). In practice, however, this financing strategy may face context-specific challenges such as limited incomes, people's spending priorities, and existing social structures, among other things (Pories et al., 2019).

Despite known benefits, effective excreta removal remains a challenge, particularly in achieving universal coverage for the characteristics of a majority of residents in low and middle-income countries (LMIC) (Dickson et al., 2016). Traditional sewers are prohibitively expensive to scale up using public funds. Similarly, due to presumably low returns and high-risk conditions, the sewerage business cannot attract private sector investments. While onsite facilities have a strong case, they can also be unaffordable for the majority of urban households whose daily average earnings are less than a dollar per day. Governments in LMICs have limited public funding and are unable or unwilling to fund onsite sanitation in the face of competing priorities (Mulatya et al., 2021).

In Kenya, individual households bear responsibility for access to improved sanitation facilities, while the government retains an overarching role in health education and creating an enabling environment for private sector participation (Mulatya et al., 2021). Only 59.3 percent of people have access to improved sanitation, with the majority of residents using a rudimentary latrine and 13.9 percent of rural residents defecating openly (Kenya - Kenya Integrated Household Budget Survey 2015-2016, n.d.).

What is concerning in Kenya is not the large number of people who lack access to safe sanitation facilities, but the slow rate at which households can gain access to improved sanitation facilities. Access to improved sanitation services in Kenya increased by only 1.3% between 2009 and

2015 (Kenya - Kenya Integrated Household Budget Survey 2015-2016, n.d.). Despite the availability of technologies and products on the market, demand for improvements in sanitation quality has remained sufficiently low. Given current trends, achieving universal access to drinking water and sanitation by 2030 will be difficult.

Methods

Study Design

The study required application of both quantitative and qualitative research elements to properly cover the objectives. However, it is majorly a qualitative inquisition into the financing of communal sanitation facilities in the informal settlement of Nyalenda. Thus, a cross sectional study is inherently manageable and befitting to the scope and resources available. The study employed two tools in its fulfillment; semi structured questionnaires and interview schedules. Semi structured questionnaires were administered to the residents of Nyalenda while the interview schedules were used in administering the same concerns to key informants positioned around sanitation financing touching on Nyalenda.

Location of the study

The study was conducted in Nyalenda informal settlement, Kisumu City. Nyalenda slums, whose population is 64,924, is a major high density and high population slum in Kisumu City. (KNBS, 2019).

Sampling Techniques

This study used both probability and non-probability sampling methods to populate the required sample size. The study mapped available communal sanitation facilities in Nyalenda and cluster them, out of each cluster the researcher by means of a random lottery picked households to participate in the study. The number of households per cluster was determined by proportionate distribution so that clusters spotting higher densities are as equitably represented in the study as the rest.

	Strongly Agree	Agree	Moderately Agree	Disagree	Strongly Disagree	Mean	SD
The current financing strategies for communal sanitation facilities promote sustainable and long-term funding	12(3.0%)	19(4.75%)	51(12.75%)	216(54.0%)	102(25.5%)	2.11	0.43
There is transparency and accountability of financial processes related to communal sanitation facilities	31(7.75%)	66(16.5%)	118(29.5%)	100(25.0%)	85(21.25%)	3.02	0.68
We can easily access finances for construction of communal sanitation facilities	6(1.5%)	14(3.5%)	23(5.75%)	241(60.25%)	116(29.0%)	1.72	0.59
Innovative financing models, such as revolving funds or microfinance, are essential for achieving sustainable onsite financing for sanitation facilities	121(30.25%)	173(43.25%)	100(25.0%)	6(1.5%)	0(0.0%)	3.82	0.38
Composite						2.67	0.71

Table 1: Sustainable Onsite for Financing Communal Sanitation Facilities. Source: Research data, 2023

This study identified the key informants that weighed on provision, management and legislation for communal sanitation facilities within Nyalenda. This was done by actively seeking out the providers, financiers and legislators involved as well as referrals to the same from their peers within the setting of Nyalenda. The number of key informants desired by the study was determined by information saturation where the researcher kept interacting with the key persons until they are exhausted or until the information begins taking on a redundant nature.

Sample Size Determination

The sample size was determined using the Solvins method.

$n = N / (1 + (Ne^2))$, Where; n = sample size, Population; 64,924 (KNBS, 2021), e =Tolerance of desired Level of Confidence, taken at 0.05% at 95% Confidence Level, $n = 64,924 / (1 + (64,924 \times 0.05)) = 64924/162.31 = 400$. From the calculation a sample size of 400 respondents were drawn from a total population of 64,924 (KNBS, 2019) who are the residents of Nyalenda.

Data Entry and Analysis

Key informant data was captured by voice recording to capture the finer points, this raw data shall be transcribed to highlight the key thematic features relevant to the study. SPSS version 25 was used for data coding, data entry and data analysis for the quantitative aspects of this study while Nvivo version 20 was used to analyze the qualitative aspects from key informants.

For quantitative data, categorical variables such as sex, level of education, occupation and income levels was summarized using proportions, percentages and frequencies. Continuous variables such as age were summarized using mean, median, range and standard deviation. Bivariate analysis was done to determine association between independent and dependent variables. Pearson Correlations was used for statistical associations.

For qualitative data, the FGDs and KIs was done and the audiotapes transcribed. After transcribing, coding was done using keywords, key concepts or reflections in vivo and analyzed for common themes to achieve improved organization when pulling out results and key findings.

Ethical Considerations

Permission to carry out the study was obtained from National Commission for Science, Technology & Innovation (NACOSTI).

Findings and Discussions

The findings of the survey indicate that there is a lack of confidence among respondents in the current financing strategies for communal sanitation facilities (54.0%) as indicated in table 1. This agrees with the findings of Simiyu et al., (2017) who claimed that most low-income areas experience challenges in financing of sanitation facilities. The majority of respondents disagreed with the current financing strategies' effectiveness, which only achieves short-term funding. This finding has significant implications for policymakers

	SA	A	MA	D	SD	Mean	SD
The availability of diverse sanitation financing options positively contributes to the establishment of sustainable onsite financing for sanitation facilities	102 (25.5%)	189 (47.25%)	80 (20.0%)	21 (5.25%)	8 (2.6%)	3.68	0.51
Utilizing different financing options enhances the long-term sustainability of onsite financing for sanitation facilities	73 (18.25%)	194 (48.5%)	81 (20.25%)	40 (10.0%)	12(3.0%)	3.12	0.69
Public-private partnerships play a crucial role in facilitating sustainable onsite financing for sanitation facilities	66 (16.5%)	143 (35.75%)	123 (30.75%)	41 (10.25%)	27(6.75%)	2.92	0.63
Utilizing a combination of financing options (e.g., grants, loans, user fees) contributes to the financial resilience of onsite financing for sanitation facilities	68 (17.0%)	175 (43.75%)	114 (28.5%)	31 (7.75%)	12(3.0%)	3.03	0.72
Composite						3.19	0.67

Table 2: Finance Options and Sustainable Onsite Financing for Communal Sanitation.

Source: Research data, 2023 . SA=Strongly Agree A=Agree MA=Moderately Agree D=DisagreeSD= Strongly Disagree

and financiers responsible for communal sanitation facilities. However, the respondents did indicate a moderate level of agreement when it comes to transparency and accountability in financial processes related to communal sanitation facilities (29.5%). This indicates that there is an existing framework for financial processes related to communal sanitation facilities, albeit not completely satisfactory.

The survey also revealed that a significant number of community members face challenges in obtaining finances to construct sanitation facilities (60.25%), these findings are in tandem with those of Murei et al., (2022) who found that being of sound financial standing might be grounds for improved sanitation practices. Innovative financing models such as revolving funds or micro-finance, which could increase access to funds for sanitation facilities, were viewed favorably by a majority of respondents. The findings suggest that community members favor innovative financing models with more accessible avenues for getting funds. Policymakers and financiers involved in communal sanitation facilities will need to explore innovative financing models to promote sustainable onsite financing. These innovative financing models must address the challenges faced by community members in accessing finances for sanitation facilities and accommodating long-term

funding requirements.

The study found that diverse sanitation financing options positively contribute to the sustainability of onsite sanitation facilities (47.25%). Having multiple financing choices for construction and maintenance is crucial for long-term viability, supported by a significant percentage of respondents. Public-private partnerships play a crucial role in facilitating sustainable financing for sanitation facilities. Utilizing a combination of financing options, such as grants, loans, and user fees, enhances financial resilience. These findings align with prior research, emphasizing the importance of various financing mechanisms in ensuring the financial sustainability of communal sanitation facilities. For instance, a report by World Health Organization & UN-Water, 2017, revealed the

	Frequency	Percent
CBO Financing	7	1.8
NGO Financing	248	62.0
County Government Financing	5	1.3
Personal Contribution	301	79.3
Other	2	0.5

Table 3: Available financing option.

Source: Research data, 2023

	SA	A	MA	D	SD	Mean	SD
The presence of strong regulatory frameworks and policies positively influences the establishment of sustainable onsite financing for sanitation facilities	91 (22.75%)	194 (48.5%)	73 (18.25%)	31 (7.75%)	11 (2.75%)	3.22	0.91
Transparent and +accountable financial management practices are key enablers of sustainable onsite financing for sanitation facilities	81 (20.25%)	175 (43.75%)	97 (24.25%)	40 (10.0%)	7 (1.75%)	3.17	0.78
Effective governance and management structures are essential for ensuring the sustainability of onsite financing for sanitation facilities	76 (19.0%)	173 (43.25%)	93 (23.25%)	48 (12.0%)	10 (2.5%)	3.09	0.73
Capacity building and technical assistance programs enhance the implementation of sustainable onsite financing for sanitation facilities	54 (13.5%)	139 (34.75%)	166 (41.5%)	37 (9.25%)	4 (1.0%)	2.81	0.62
Composite						3.07	0.81

Table 4: Factors affecting financing of communal Sanitation by Public Sector. Source: Research data, 2023

SA=Strongly Agree A=Agree MA=Moderately Agree D=DisagreeSD= Strongly Disagree

	SA	A	MA	D	SD	Mean	SD
Individuals or communities are likely to adopt pay-as-you-go financing models for sustainable onsite sanitation facilities	111 (27.75%)	174 (43.5%)	93 (23.25%)	19 (4.75%)	3 (0.75%)	4.18	0.37
Individuals' willingness to pay plays a significant role in promoting sustainable onsite financing for sanitation facilities	51 (12.25%)	215 (53.75%)	117 (29.25%)	10 (2.5%)	7 (1.75%)	4.06	0.61
The accessibility of financing options impact the willingness of stakeholders to provide financial support for communal sanitation facilities	46 (11.5%)	192 (48.0%)	133(33.2 5%)	18 (4.5%)	11 (2.75%)	3.98	0.92
Increased accessibility to financing options leads to more diverse funding sources for communal sanitation facilities	94 (23.5%)	159 (39.75%)	136(34.0 %)	11 (2.75%)	0 (0.0%)	4.01	0.59
Composite						4.06	0.64

Table 5: Sanitation Financing Factors and Financing of communal sanitation facilities.

Source: Research data, 2023 . SA=Strongly Agree A=Agree MA=Moderately Agree D=DisagreeSD= Strongly Disagree

presence of a wide range of sanitation finance options and approaches. While there had been much discussion about the dangers of "sanitation subsidies," it was hard to imagine a sanitation program that did not involve some public or external investment, even if only to share information or stimulate demand. Although early adopters in all countries had invested in sanitation without the need for public interventions, they were usually a small minority. The case studies showed a diverse spectrum of options, from minimal investments in the start-up of revolving funds to significant community mobilization and demand stimulation, and even hardware subsidies of up to 75 percent of capital costs in addition to community mobilization.

In the study, the most common financing op-

tions in communities were personal contributions and NGO financing, this agrees with the findings of Annamraju et al., (2015) who established NGO financing as the most common source of finance for the construction of sanitation facilities. Respondents believed that being aware of available financing options had a significant influence on communal sanitation financing.

Likert statements revealed that strong regulatory frameworks and policies positively influenced sustainable onsite financing for sanitation facilities, while transparent and accountable financial management practices were seen as key enablers. Effective governance and management structures were also essential for sustainability, and capacity building and technical assistance programs enhanced implementation. Overall, awareness and

understanding of financing options played a crucial role in supporting communal sanitation facilities' financial sustainability.

Likert-type questions were used to assess respondents' opinions on sanitation financing factors. Results showed that 43.5% agreed that pay-as-you-go financing models are likely to be adopted for sustainable sanitation facilities. Additionally, 53.75% agreed that individuals' willingness to pay plays a significant role in promoting sustainable financing. Respondents also agreed that financing options' accessibility impacts stakeholders' willingness to support communal sanitation facilities. Increased accessibility led to more diverse funding sources, as agreed upon by 97.25% of respondents. These findings corroborate the findings of Simiyu et al., (2017), Pories (2019), and Malima (2022) who found that access to finance and willingness to pay (WTP) significantly influenced financing of onsite sanitation facilities.

Conclusion

The study emphasized the importance of enablers of sanitation financing, such as awareness of financing options and supportive policies. Respondents demonstrated a high level of awareness of available financing options, which empowered them to access funding for communal sanitation facilities. Personal contributions and NGO financing emerged as prevalent options, and respondents believed that awareness played a significant role in securing financing. The study found a weak positive association between enablers of sanitation financing and the financial sustainability of communal sanitation facilities (Pearson correlation =0.268 and significance=0.000), suggesting that while enablers are important, they alone may not be sufficient to ensure long-term financial viability.

Recommendations

Based on the findings of the study, the following recommendations can be made:

i) Strengthen Financial Education and Awareness: To address the challenge of income and afford-

ability, there is a need to enhance financial education and awareness among individuals and communities. This can be done through targeted campaigns, workshops, and community engagement initiatives that highlight the importance of sanitation and the available financing options.

- ii) Expand Financing Options: While personal contributions and NGO financing were identified as prevalent options, efforts should be made to diversify and expand the range of financing options available for communal sanitation facilities. This can include exploring innovative funding mechanisms, such as microfinance, public-private partnerships, and crowd-funding platforms, to provide individuals and communities with more choices to finance sanitation projects.
- iii) Develop Supportive Policies and Regulatory Frameworks: Governments and relevant authorities should develop and implement supportive policies and regulatory frameworks that encourage and facilitate sanitation financing. This can include incentivizing private sector participation, streamlining permit processes, and providing tax incentives or subsidies for sanitation initiatives.
- iv) Foster Collaboration and Partnerships: Collaboration between various stakeholders, including governments, NGOs, community-based organizations, and financial institutions, is crucial for sustainable sanitation financing. Strengthening partnerships and creating platforms for collaboration can enhance resource mobilization, knowledge sharing, and capacity building in the sanitation sector

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