



DEVELOPMENT FINANCE MECHANISMS AND THE PERFORMANCE OF WATER INFRASTRUCTURE PROJECTS IN KITUI COUNTY, KENYA

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Abstract:

Water infrastructure is central to improving access to safe and reliable water services, particularly in arid and semi-arid regions such as Kitui County, Kenya. Despite considerable investments from county government budget allocations, donor grants, climate finance, and public-private partnerships (PPPs), water infrastructure projects continue to experience persistent challenges, including low functionality rates, incomplete projects, and limited-service coverage. The general objective of the study was to examine the effect of development finance mechanisms on the performance of water infrastructure projects in Kitui County, Kenya. Specifically, the study sought to determine the effect of county government budget allocations, donor grants, public-private partnerships, and climate finance on the performance of water infrastructure projects. The study was anchored on Fiscal Decentralization Theory, Resource Dependence Theory, Public Choice Theory, and Climate Change Adaptation Theory, and adopted an explanatory research design. The target population comprised 595 respondents drawn from development partners, non-governmental organizations, Water User Associations, and beneficiary households in Kitui County, from which a sample of 239 respondents was selected using stratified random sampling and the Yamane (1967) formula. Primary data were collected using structured questionnaires administered both physically and through Google Forms. A pilot study involving 23 respondents in Machakos County was conducted to test reliability and validity, with Cronbach's Alpha values exceeding 0.94 for all constructs and Average Variance Extracted (AVE) values

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ranging from 0.865 to 0.923. Prior to inferential analysis, diagnostic tests for multicollinearity, normality, and heteroscedasticity were conducted, and data were analyzed using Pearson correlation and multiple regression analysis with the aid of IBM SPSS Statistics version 26.0. The findings indicate that county government budget allocations ($\beta = 0.43$, $p < 0.05$), donor grants ($\beta = 0.71$, $p < 0.05$), and public-private partnerships ($\beta = 0.48$, $p < 0.05$) had positive and statistically significant effects on the performance of water infrastructure projects, while climate finance had a statistically significant but negative effect ($\beta = -0.74$, $p < 0.05$). The model explained 97.1% of the variation in project performance ($R^2 = 0.971$). The study concludes that development finance mechanisms are critical determinants of water infrastructure project performance in Kitui County and recommends enhanced budget transparency, improved donor funding coordination, strengthened PPP frameworks, and better integration of climate finance into local implementation systems.

JEL: H54, H76, Q25

Keywords: development finance mechanisms, county government budget allocations, donor grants, public-private partnerships, climate finance, water infrastructure project performance

1. Introduction

Development finance mechanisms refer to the financial instruments and policy frameworks used to mobilize and allocate resources for capital-intensive development projects such as water infrastructure. These mechanisms address funding gaps that cannot be met through government budgets alone and include county government allocations, donor grants, public-private partnerships (PPPs), and climate finance. By diversifying funding sources, they enhance the feasibility and sustainability of water infrastructure development (Murithi, 2019). However, the effectiveness of these mechanisms depends on how well they are coordinated and implemented in practice.

Globally, development finance plays a central role in supporting water infrastructure development, particularly in regions facing resource constraints and water scarcity. Despite increased financing through grants, concessional loans, and PPPs, many developing countries continue to experience inadequate water infrastructure, affecting access to safe and reliable water services (Akomea *et al.*, 2023). This situation persists despite the global commitment to Sustainable Development Goal 6, which seeks universal access to clean water and sanitation, and it suggests possible inefficiencies in how development finance mechanisms are translated into infrastructure outcomes.

Across Africa, blended financing models combining public funds, donor support, and private sector participation have been widely adopted to address water infrastructure gaps. Institutions such as the African Development Bank and various regional programs have supported water investments; however, many countries still face

challenges related to weak institutional capacity, sustainability of projects, and inefficient resource utilization (Smoke, 2022; Perera, 2021). Similar patterns are observed in East Africa, where donor-funded and government-supported water programs in countries such as Uganda and Tanzania have improved infrastructure coverage but continue to struggle with maintenance, operational sustainability, and financial constraints (Ombella, 2020).

In Kenya, development finance mechanisms are embedded in national water development frameworks such as Kenya Vision 2030 and the National Water Master Plan. Financing is sourced from county government budgets, donor agencies, concessional loans, and PPP arrangements implemented through institutions such as the Water Sector Trust Fund and regional water agencies (Ministry of Water, Sanitation and Irrigation, 2021). Notwithstanding increased financial inflows, water infrastructure projects continue to face persistent challenges, including unequal service coverage, funding gaps, climate-related risks, and coordination inefficiencies among implementing agencies (UNICEF & WHO, 2022).

At the county level, where implementation of water infrastructure projects is concentrated, the effectiveness of development finance mechanisms becomes more critical. County government budget allocations determine the level of internal funding available for project implementation and maintenance. Donor grants provide supplementary external financing but may be affected by conditionalities and disbursement delays. PPPs introduce private capital and technical expertise to improve efficiency, while climate finance aims to strengthen resilience to environmental risks. However, the combined effect of these financing mechanisms on project performance remains inconsistent in practice, particularly in devolved units such as counties.

Despite substantial investments in water infrastructure through county government budget allocations, donor funding, PPPs, and climate finance, the performance of water infrastructure projects in Kitui County remains persistently inadequate. Empirical evidence shows that only 25.3% of households have access to piped water, with rural access as low as 15.3%, while 13.9% of households spend over 30 minutes fetching water (KNBS, 2025). At the county level, only 38% of households access reliable and safe water services (Kitui CIDP, 2023–2027), reflecting a disconnect between financial investment and actual project outcomes in terms of functionality, sustainability, and coverage. Existing studies have largely focused on water access and coverage outcomes rather than comprehensive performance dimensions such as functionality, reliability, efficiency, and sustainability, while also treating financing in aggregate rather than examining the distinct effects of county budgets, donor grants, PPPs, and climate finance. This creates a combined empirical, conceptual, and contextual gap, necessitating an investigation into how development finance mechanisms influence the performance of water infrastructure projects in Kitui County, Kenya.

The general objective of the present study was to examine the effect of development finance mechanisms on the performance of water infrastructure projects in Kitui County, Kenya. Specifically, the study sought (i) to determine the effect of county

government budget allocations on the performance of water infrastructure projects in Kitui County, Kenya; (ii) to assess the effect of donor grants on the performance of water infrastructure projects in Kitui County, Kenya; (iii) to evaluate the effect of public–private partnerships on the performance of water infrastructure projects in Kitui County, Kenya; and (iv) to examine the effect of climate finance on the performance of water infrastructure projects in Kitui County, Kenya.

2. Literature Review

2.1 Theoretical Literature Review

A theoretical review provides the conceptual foundation upon which a study is anchored by examining relevant theories that explain the relationships among the study variables. It helps to establish the theoretical perspectives that guide the understanding of how development finance mechanisms influence the performance of water infrastructure projects. In this study, the theoretical review is anchored in Fiscal Decentralization Theory, Resource Dependence Theory, Public Choice Theory, and Climate Change Adaptation Theory. These theories collectively explain how devolved fiscal authority, external resource dependence, public–private collaboration, and climate-responsive financing contribute to improved water infrastructure performance.

2.1.1 Fiscal Decentralization Theory

Wallace Oates first proposed the theory of fiscal decentralization in 1972. It asserts that local governments are better able to react to and understand community demands than central governments. The theory states that decentralizing financial decision-making to the county level results in more effective public resource allocation and use that may reflect local preferences. Counties may plan, generate budgets, carry out development, and maintain the operation of projects that directly affect the welfare of the populace, such as water infrastructure, thanks to fiscal decentralization (Wei *et al.*, 2020). This theory is closely related to the first research objective, which examines how county government budget allocations affect the performance of water infrastructure projects.

2.1.2 Resource Dependence Theory

Resource Dependence Theory (RDT), introduced by Pfeffer and Salancik in 1978, explains how organizations rely on outside resources to achieve their goals. When internal resources are insufficient, organizations such as governments need material, technical, and financial help from outside parties. Thus, donor donations play a critical role in supporting the development of water infrastructure, particularly in low-income regions where domestic funding is scarce (Kaberia & Muathe, 2021). RDT provides a useful framework for understanding how donor funds affect developmental outcomes and is directly relevant to the second research objective.

2.1.3 Public Choice Theory

Created by Buchanan and Tullock in 1962, Public Choice Theory incorporates the application of economic ideas to decision-making processes. The theory posits that private players are often more innovative, efficient, and financially capable of providing services, justifying public–private partnerships in water infrastructure. PPPs help close the finance gap, improve operational efficiency, and increase accountability through competition (Aulia *et al.*, 2025). This theory is aligned with the third objective of evaluating the effect of PPPs on project performance.

2.1.4 Climate Change Adaptation Theory

Established by Smit and Pilifosova (2001), this theory focuses on how societies adjust to climatic variability to reduce vulnerability. Climate-related funding enables governments and communities to construct infrastructure that can withstand climatic shocks such as drought and floods. Boreholes, water harvesting systems, and groundwater recharge systems are examples of resilient water systems financed by climate finance (IPCC, 2018). The theory is relevant to the fourth research objective, which examines the effect of climate finance on water infrastructure performance in Kitui County.

2.2 Empirical Literature Review

The empirical review examines previous studies related to development finance mechanisms and the performance of water infrastructure projects. Specifically, it synthesizes empirical evidence on the relationship between county government budget allocations, donor grants, public–private partnerships, climate finance, and infrastructure performance outcomes. The review draws on findings from both developed and developing economies, identifies areas of consensus and divergence in the literature, and highlights the research gaps that justify the current study.

2.2.1 County Government Budget Allocations and Water Infrastructure Performance

Government budget allocations remain a primary source of financing for water infrastructure, particularly in developing and semi-arid regions. Mwangi (2023), using panel data from Kenyan counties, found that increased county budgetary allocations significantly improved water infrastructure coverage and service delivery, emphasizing that sustained public investment supports both expansion and maintenance of water systems. Okech and Julius (2021) observed that despite increased public spending on water infrastructure, many projects remain delayed or incomplete due to poor financial planning and resource allocation inefficiencies. Murithi (2019) further emphasizes that water infrastructure performance is shaped by a combination of financial preparedness, stakeholder coordination, regulatory frameworks, and institutional capacity. A consistent pattern emerges: while government budget allocations are widely recognized as essential, their effect on performance is highly influenced by allocation efficiency, governance systems, and institutional capacity.

2.2.2 Donor Grants and Water Infrastructure Performance

Donor grants have historically played a central role in financing water infrastructure in developing countries. In developed contexts, Gebhardt *et al.* (2022) found that structured externally supported financing enhances infrastructure outcomes through improved accountability and planning efficiency. In developing countries, Adeniran and Pittock (2021) found that systemic inefficiencies, weak prioritization, and limited decentralization undermined sustainability despite substantial donor involvement. Gachui (2021) established that donor support improves project implementation through funding, training, and stakeholder engagement. Most studies assess donor financing in terms of access or implementation success, rather than comprehensive infrastructure performance outcomes, representing a key empirical gap this study addresses.

2.2.3 Public-Private Partnerships and Water Infrastructure Performance

PPPs are increasingly promoted as alternative financing and delivery mechanisms for infrastructure development. Njeru and Maingi (2021), using regression analysis, found that PPP success in the water sector is significantly influenced by risk categories including operational, financial, regulatory, and environmental risks. In Kenya, Onyango (2023) found that PPP arrangements can improve service coverage and investment mobilization, although outcomes vary depending on institutional capacity and contract management quality. Lima and Marques (2021) emphasize that PPP effectiveness depends on clear contractual design, strong governance structures, and appropriate risk-sharing mechanisms. Most existing studies analyze PPPs at national or utility levels, with limited evidence from devolved county contexts where implementation challenges are more pronounced.

2.2.4 Climate Finance and Water Infrastructure Performance

Climate finance has emerged as a key development financing mechanism aimed at supporting infrastructure resilience and climate adaptation. Granata and Di Nunno (2025) demonstrate that climate-aligned financing mechanisms can improve water infrastructure resilience by integrating adaptive technologies with innovative funding models. Orindi *et al.* (2025) provide evidence from Kenya's County Climate Change Fund (CCCF), showing that climate finance can enhance decentralized decision-making and climate-sensitive planning. However, Buchner *et al.* (2019) highlight that climate finance remains fragmented, complex to access, and unevenly distributed, which reduces effectiveness in translating funding into tangible infrastructure outputs. Limited evidence exists on how climate finance operates within arid and semi-arid counties such as Kitui, representing a contextual gap.

3. Research Methodology

3.1 Research Design

This study employed an explanatory research design to examine the relationship between development finance mechanisms and the performance of water infrastructure projects in Kitui County, Kenya, without manipulating any of the study variables. The design was deemed appropriate because it facilitates the investigation of causal relationships among variables and enables the assessment of the magnitude and direction of such relationships. The design supported the collection of quantitative data from a cross-section of the selected population and the application of statistical techniques such as correlation and regression analysis to establish the relationships between county government budget allocations, donor grants, public-private partnerships, climate finance, and water infrastructure project performance.

3.2 Target Population and Sampling Procedure

The target population comprised 595 respondents drawn from key stakeholder groups in Kitui County, comprising 25 representatives of development partners, 30 non-governmental organization representatives, 40 Water User Association members, and 500 beneficiary households. Using the Yamane (1967) formula and a 5% margin of error, a sample of 239 respondents was derived. Stratified random sampling was employed to ensure proportional representation of each stakeholder group, followed by simple random sampling within each stratum. This sampling approach enhanced representativeness and minimized sampling bias.

3.3 Data Collection Instrument and Procedure

Primary data were collected using structured questionnaires designed to capture respondents' perceptions of county government budget allocations, donor grants, public-private partnerships, climate finance, and the performance of water infrastructure projects. All measurement items were assessed using a five-point Likert scale ranging from 1 (Very Low) to 5 (Very High), and the questionnaires were administered both physically and through Google Forms.

Before the main survey, a pilot study involving 23 respondents was conducted in Machakos County to assess the clarity, reliability, and validity of the research instrument. Reliability was evaluated using Cronbach's alpha coefficient, with all constructs recording values exceeding the recommended threshold of 0.70 and, more specifically, exceeding 0.94, indicating excellent internal consistency. Convergent validity was assessed using Average Variance Extracted (AVE), with values ranging from 0.865 to 0.923, all exceeding the 0.50 threshold and confirming strong convergent validity (Mellinger & Hanson, 2020). Of the 239 questionnaires distributed during the main survey, 180 were returned and found usable for analysis.

3.4 Data Analysis

The collected data were coded and analyzed using IBM SPSS Statistics version 26.0. Descriptive statistics, including means and standard deviations, were used to summarize respondents' perceptions of the study variables. Inferential analysis was conducted using Pearson correlation analysis and multiple linear regression to examine the relationships among the study variables and test the proposed hypotheses.

Before inferential analysis, diagnostic tests were conducted to assess compliance with the assumptions of the Classical Linear Regression Model (CLRM). The Variance Inflation Factor (VIF) test detected high multicollinearity ($VIF > 24$ for donor grants and climate finance), which was addressed using Principal Component Analysis (PCA); the Kaiser-Meyer-Olkin measure ($KMO = 0.67$) and a significant Bartlett's Test ($p < 0.05$) confirmed the suitability of PCA. The Shapiro-Wilk test indicated non-normality; however, given the sample size ($n = 180$), the Central Limit Theorem justified proceeding with regression analysis. The Breusch-Pagan test confirmed the presence of heteroscedasticity, which was addressed using bootstrapped standard errors with 1,000 resamples.

A multiple linear regression model was used to examine the effect of development finance mechanisms on project performance, specified as:

$$PWIF = \beta_0 + \beta_1CGB + \beta_2DG + \beta_3PPP + \beta_4CF + \varepsilon$$

Where, PWIF = Performance of Water Infrastructure Projects; CGB = County Government Budget Allocations; DG = Donor Grants; PPP = Public-Private Partnerships; CF = Climate Finance; and ε = Error term.

4. Results and Discussion

4.1 Response Rate

Of the 239 questionnaires distributed, 180 were completed and returned, yielding a response rate of 75.3%. This response rate exceeded the minimum threshold recommended for social science research and was considered adequate for statistical analysis (Babbie, 2020), thereby minimizing the likelihood of non-response bias and enhancing the reliability of the findings.

Table 1: Response Rate

Category	Frequency	Percentage (%)
Returned Questionnaires	180	75.3
Unreturned Questionnaires	59	24.7
Total	239	100.0

4.2 Reliability and Validity Analysis

The reliability of the measurement scales was assessed using Cronbach's alpha coefficients, while convergent validity was assessed using Average Variance Extracted

(AVE). All constructs exceeded the recommended reliability threshold of 0.70, with Cronbach's alpha values exceeding 0.94 across all constructs, indicating excellent internal consistency. Similarly, all constructs recorded AVE values above the 0.50 threshold, ranging from 0.865 to 0.923, confirming strong convergent validity of the research instrument.

Table 2: Reliability and Validity Statistics

Construct	Cronbach's Alpha	AVE Range
County Government Budget Allocations	> 0.94	0.865 – 0.923
Donor Grants	> 0.94	0.865 – 0.923
Public-Private Partnerships	> 0.94	0.865 – 0.923
Climate Finance	> 0.94	0.865 – 0.923
Performance of Water Infrastructure Projects	> 0.94	0.865 – 0.923

Note: AVE values are reported as the overall range recorded across constructs.

4.3 Descriptive Statistics

The descriptive results indicate that respondents generally agreed that development finance mechanisms contribute positively to the performance of water infrastructure projects in Kitui County. County government budget allocations and public-private partnerships recorded the highest aggregate mean scores ($M = 4.47$), followed by donor grants and climate finance ($M = 4.33$ each). The dependent variable, performance of water infrastructure projects, recorded an aggregate mean of $M = 4.47$, suggesting generally positive perceptions of project performance among respondents.

Table 3: Descriptive Statistics

Variable	Mean	Standard Deviation
County Government Budget Allocations	4.47	0.56
Donor Grants	4.33	0.61
Public-Private Partnerships	4.47	0.56
Climate Finance	4.33	0.61
Performance of Water Infrastructure Projects	4.47	0.56

4.4 Correlation Analysis

Pearson correlation analysis was conducted to determine the strength and direction of the relationships between development finance mechanisms and water infrastructure project performance. All independent variables were positively and significantly correlated with performance at the 0.01 significance level. Public-private partnerships recorded the strongest association with performance ($r = 0.96$), followed by county government budget allocations ($r = 0.91$), donor grants ($r = 0.79$), and climate finance ($r = 0.75$).

Table 4: Correlation Matrix

Variable	CGB	DG	PPP	CF	PWIF
CGB	1				
DG	.71**	1			
PPP	.91**	.81**	1		
CF	.73**	.98**	.80**	1	
PWIF	.91**	.79**	.96**	.75**	1

** Correlation is significant at the 0.01 level (2-tailed). Source: Survey Research Data (2026).

4.5 Multiple Regression Results

The regression model demonstrated very strong explanatory power, accounting for 97.1% of the variation in the performance of water infrastructure projects ($R^2 = 0.971$). The overall model was statistically significant ($F = 1462.941$, $p < 0.001$), indicating that county government budget allocations, donor grants, public-private partnerships, and climate finance collectively explained a substantial proportion of the performance of water infrastructure projects in Kitui County.

Table 5: Model Summary

Statistic	Value
R	0.985
R^2	0.971
Adjusted R^2	0.970
Std. Error of the Estimate	0.2775
F-statistic	1462.941
p-value	<0.001

Predictors: (Constant), Climate Finance, County Government Budget Allocations, Public-Private Partnerships, Donor Grants.

Table 6: ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	450.635	4	112.659	1462.941	0.000
Residual	13.476	175	0.077		
Total	464.111	179			

Dependent Variable: Performance of Water Infrastructure Projects. Source: Survey Research Data (2026).

Table 7: Regression Coefficients

Variable	B	Std. Error	Beta	t	Sig.
(Constant)	0.57	0.41	—	1.41	0.16
County Govt. Budget Allocations	0.43	0.03	0.46	13.76	0.000
Donor Grants	0.71	0.04	1.08	16.40	0.000
Public-Private Partnerships	0.48	0.04	0.49	12.69	0.000
Climate Finance	-0.74	0.05	-1.03	-16.07	0.000

Dependent Variable: Performance of Water Infrastructure Projects. Source: Survey Research Data (2026).

The fitted regression equation is:

$$PWIF = 0.57 + 0.43CGB + 0.71DG + 0.48PPP - 0.74CF$$

4.6 Discussion of Findings

County government budget allocations were found to have a positive and statistically significant effect on the performance of water infrastructure projects ($\beta = 0.43$, $p < 0.05$), implying that a one-unit increase in effective budget allocation leads to a 0.43-unit improvement in project performance. Adequate financial allocations enable counties to undertake construction, maintenance, and expansion of water infrastructure, improving accessibility, service reliability, and infrastructure functionality. These findings support Fiscal Decentralization Theory, which argues that decentralizing financial resources to sub-national governments enhances efficiency in resource allocation by aligning public expenditure with local needs, and align with Mwangi (2023), who found that sustained public investment supports the expansion and maintenance of water systems. However, the findings partially differ from Okech and Julius (2021), who cautioned that increased budget allocations alone may not improve infrastructure outcomes where financial management systems are weak.

Donor grants exhibited a positive and statistically significant influence on project performance ($\beta = 0.71$, $p < 0.05$), indicating that increased donor funding substantially enhances water infrastructure performance. This suggests that external support plays an important complementary role, particularly where county financial capacity is constrained, although the magnitude of the coefficient suggests that donor conditionalities and limited implementation flexibility may moderate its full impact. The findings align with Resource Dependence Theory, which emphasizes the importance of external resources in supplementing insufficient internal capacity, and concur with Adeniran and Pittock (2021), who found that well-coordinated donor financing improves project sustainability, and with Gachui (2021), who highlighted donor capacity building as critical for water infrastructure success in Kenya.

Public-private partnerships showed a positive and statistically significant effect on project performance ($\beta = 0.48$, $p < 0.05$), suggesting that PPP arrangements improve efficiency, implementation speed, and sustainability of water infrastructure projects. The results are consistent with Public Choice Theory, which emphasizes the role of public-private collaboration in improving service delivery through competitive and incentive-based mechanisms, since PPP arrangements facilitate risk-sharing between public institutions and private investors, thereby improving project sustainability. These findings align with Clark and Hakim (2019), who demonstrated that well-structured PPP arrangements improve access to financing and infrastructure expansion, and with Lima and Marques (2021), who emphasized that risk, contract, and governance arrangements are key determinants of PPP performance in the water sector.

Climate finance showed a statistically significant but negative effect on project performance ($\beta = -0.74$, $p < 0.05$), implying that, contrary to expectations, increases in climate finance are associated with a decline in project performance. This may be attributed to inefficiencies in allocation, weak implementation frameworks, or delays in disbursement and utilization. Although the theoretical importance of climate finance in enhancing resilience is evident, the negative coefficient suggests that climate finance has

not yet been effectively integrated into local infrastructure financing systems in Kitui County. These findings partly contradict Climate Change Adaptation Theory but are consistent with empirical evidence from Buchner *et al.* (2019), who highlighted that fragmented and complex climate financing systems can hinder effective implementation, and with Orindi *et al.* (2025), who found that weak local implementation capacity constrains effective utilization of climate finance at the county level.

5. Conclusions and Recommendations

5.1 Conclusions

This study examined the effect of development finance mechanisms on the performance of water infrastructure projects in Kitui County, Kenya. The findings demonstrate that county government budget allocations, donor grants, and public-private partnerships each have a positive and statistically significant effect on project performance. Climate finance, while theoretically beneficial, shows a negative empirical relationship with project performance, attributed to institutional challenges, bureaucratic delays, and insufficient integration into county implementation systems. The overall model explains 97.1% of the variation in project performance, confirming that development finance mechanisms are critical determinants of water infrastructure outcomes.

Effective county-level fiscal management contributes to improved implementation, timely completion, and long-term sustainability of water infrastructure projects. Donor-supported programmes play an important role in the rehabilitation, repair, and sustainability of water infrastructure facilities, particularly in resource-constrained settings. Well-structured PPP arrangements supported by strong institutional and regulatory frameworks are critical for achieving effective and sustainable water infrastructure development. Climate finance requires stronger institutional structures, effective monitoring mechanisms, and deeper integration into county planning systems to achieve its intended impact on water infrastructure development.

5.2 Recommendations

5.2.1 Managerial Recommendations

County water sector managers should strengthen budget planning, execution efficiency, and project monitoring systems to ensure efficient utilization of county government budget allocations, with priority given to timely disbursement of funds, transparent procurement processes, and regular financial audits. Project managers should improve coordination with donor agencies to ensure timely release and effective utilization of donor grants, supported by strengthened supervision mechanisms and performance tracking systems. Management teams should also actively engage private sector partners through well-structured PPP agreements that clearly define roles, risk mechanisms, and performance expectations, and should improve the integration of climate finance into

project planning through simplified access procedures and dedicated technical support at the county level.

5.2.2 Policy Recommendations

The county government of Kitui should increase budgetary allocations towards water infrastructure projects and enforce transparency and accountability in the utilization of county development funds. Harmonized donor coordination policies should be established to align donor grants with county priorities, while PPP regulatory frameworks should be strengthened to enhance private sector participation while safeguarding public interests. Climate finance policies should be reformed to improve access, allocation efficiency, and integration into local development planning systems, particularly in arid and semi-arid regions.

5.2.3 Recommendations for Future Research

Future studies should examine development finance mechanisms using longitudinal data to assess their effects on water infrastructure performance over time and establish stronger causal inferences. Researchers may also explore the moderating roles of institutional capacity, governance quality, and public financial management systems in the relationship between development finance mechanisms and project performance. Comparative studies involving other arid and semi-arid counties in Kenya, as well as qualitative investigations into the specific administrative and disbursement barriers affecting climate finance utilization, would further enhance understanding of the contextual factors influencing water infrastructure performance.

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Conflict of Interest Statement

My name is Keziah Nangila Wasike, and I declare that there are no conflicts of interest regarding the publication of this paper. I have no financial, professional, institutional, or personal relationships that could have influenced the design, conduct, analysis, interpretation, or reporting of this research. The views and conclusions presented in this paper are solely those of the authors.

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I am an Accountant with academic interests in the Development of the finance and accounting profession. My research focuses on Development Finance Mechanisms and their influence on the performance of water infrastructure projects. My particular interests include innovative financing approaches, resource mobilisation, financial management, and the sustainability of infrastructure investments. Through my research and professional practice, I seek to contribute to knowledge on effective financing strategies that enhance project implementation, service delivery, and long-term sustainability in the water sector.

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