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Abstract

Empirical studies indicate that the implementation of national water policies yields mixed outcomes in terms of their influence on water service provision. While some contexts report improvements in access, quality and sustainability, others continue to experience limited progress due to institutional, financial and environmental limitations. In Mandera County, there are still gaps understanding the effective implementation of these policies, as evidenced by perennial water scarcity, inadequate infrastructure, and unequal distribution of services. The purpose of this study was therefore to determine the effect of stakeholder partnership on the provision of water services in Mandera County. The study was underpinned by Institutional Theory. The study was informed by pragmatism philosophy and employing a descriptive survey research design. The target population comprised 535 participants drawn from various key stakeholders in Mandera County, including the Water Resources Authority, Mandera Office, Mandera County Companies, community leaders, representatives from the Non- Governmental Organization, County Government of Mandera Water Department, and the National Drought Management Authority. The researcher used Slovin's formula to obtain a sample size of 229 respondents. The study used both descriptive and inferential statistical methods in analysis. The findings were presented on tables. The findings revealed that the coefficient of determination (R Squared) was 0.495, implying that 49.5% of the variation in the provision of water services in Mandera County is explained by stakeholder partnership. The ANOVA results showed that the model was statistically significant in explaining the effect of stakeholder partnership on the provision of water services. The regression coefficient results in revealed a positive and statistically significant relationship between stakeholder partnership and provision of water services ($\beta = 0.683$, $p = 0.000 < 0.05$). In view of the findings, the study recommends that County government of Mandera County

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Government in collaboration with the Ministry of Water, Sanitation and Irrigation, should institutionalize and upscale multi-stakeholder partnership frameworks to improve coordination in water service provision.

Keywords: *Stakeholder Partnerships, Sustainable Water Service, Water Provision, Mandera County Water Management in Kenya.*

1.0 Introduction

The availability of clean and secure water is crucial for survival, as life fundamentally depends on it (Bazaanah & Mothapo, 2024; Lebu, Lee, Salzberg, & Bauza, 2024). Both the supply and quality of water influence the prevalence or prevention of infectious diarrhea and other severe waterborne diseases, which are among the leading causes of infant mortality and malnutrition (Fardowsa, 2024). Beyond health concerns, water-related challenges also have economic consequences, such as increased absenteeism in schools and lost productivity in workplaces. As a result, ensuring access to water in a sustainable and equitable manner has become a global priority. This raises concerns for communities and nations facing unreliable, inadequate, or unsafe water supplies (WHO, 2022). Financing is a critical aspect of national water policy implementation. The World Bank estimates that countries need to invest at least 1% of their GDP annually in water infrastructure to meet basic needs (World Bank, 2017). However, many developing countries struggle to secure adequate funding for water-related projects. Innovative financing mechanisms, such as public-private partnerships, green bonds, and results-based financing, are increasingly being explored to bridge this gap.

Implementation of National Water Policy describe the process of translating a country's water-related goals, strategies, and regulations into actionable plans and concrete measures (Magrini & dos Santos, 2024). This comprehensive approach aims to manage water resources effectively, ensure equitable access to water services, and promote sustainable water use across various sectors of the economy (Sivakumar, 2024). National water policies typically encompass a wide range of issues, including water supply and sanitation, irrigation, hydropower, environmental conservation, and climate change adaptation. The success of implementing a national water policy largely depends on the creation of robust institutional frameworks and governance structures. According to the United Nations Water (UN-Water), effective water governance requires political, social, economic, and administrative systems that influence water use and management (UN-Water, 2021).

Sub-Saharan Africa is considered a water-scarce region in terms of access to clean drinking water. By 2022, nearly 400 million people in the region were without basic drinking water services (WHO, 2023). This acute shortage has profound implications for both public health and economic progress. According to Lee and Schwab (2005), unreliable water supply where residents receive water for only a limited number of hours each day creates conditions that promote stagnation and microbial growth. They further observed that fluctuations in hydraulic pressure can cause contaminants to be drawn into pipelines from surrounding polluted areas. Additionally, factors such as aging infrastructure, corrosion, and leaks within water distribution networks contribute to bacterial proliferation along the supply channels (Bazaanah & Mothapo, 2024).

The National Water Policy is one of the fundamental social policies that underpins a country's socioeconomic development (Arfan, Ansari, Ullah, Hassan, Siyal & Jia, 2020). It serves as a

crucial framework for managing water resources, ensuring access to clean water, maintaining water quality, and addressing related challenges. Establishing a clear and comprehensive National Water Policy is essential for advancing sustainable development goals and safeguarding water security. The United Nations Development Programme (UNDP) highlights the importance of Integrated Water Resources Management (IWRM) in achieving these objectives (UNDP, "Integrated Water Resources Management"). Effective water policies play a key role in reducing the impact of droughts, floods, and other climate-related threats (Fabian, Kwon, Vithanage, & Lee, 2023). By promoting responsible water use and conservation strategies, these policies strengthen community resilience and long-term sustainability.

Water policies and programs have often been managed in isolation by government institutions and stakeholders, with limited coordination between them. Additionally, developments at river sources have frequently proceeded without sufficient consideration of their downstream effects (Adom & Simatele, 2024). Issues related to water quality are commonly treated separately from water quantity challenges, while groundwater contamination has severely disrupted the natural connection between surface water and underground reserves. The relationship between land and water systems is frequently overlooked, resulting in ecosystem degradation and inequitable access to water resources (Kahinda & Boroto, 2009). In South Africa, the number of major rivers classified as being in poor ecological condition increased fivefold between 1999 and 2015, with many suffering irreversible damage.

In Brazil, the National Water Resources Policy, established in 1997, focuses on decentralized and participatory management, emphasizing the importance of river basin committees and water agencies (ANA, 2019). Despite Brazil having about 12% of the world's freshwater resources, water distribution remains highly uneven (Scanlon, Fakhreddine, Rateb, de Graaf, Famiglietti, Gleeson & Zheng, 2023). The southeastern region, where major cities like São Paulo and Rio de Janeiro are located, often faces severe water shortages. According to the National Water Agency (2019), approximately 35 million Brazilians lack access to safe drinking water, and over 100 million do not have proper sanitation facilities. Recent efforts have included substantial investments in water infrastructure and initiatives to improve water quality and accessibility. However, challenges persist due to pollution, deforestation, and climate change, which impact water availability and quality (Scanlon *et al.*, 2023).

Singapore, a small city-state in Southeast Asia, has implemented a comprehensive and successful National Water Policy, known as the "ABC Waters Program" (Tortajada, Hartley, Ong & Arora, 2024). The program focuses on the principles of Active, Beautiful, and Clean (ABC) waters, aiming to integrate water resources with urban planning and development. Under the ABC Waters Program, Singapore has transformed its water bodies into clean and attractive assets, while also providing multiple benefits to the community (Linh, Ahmed & Loc, 2023). The policy includes initiatives such as the construction of rain gardens, bioswales, and floating wetlands to enhance water quality and reduce flood risks. These initiatives not only contribute to the beautification of urban areas but also provide natural habitats for wildlife.

The Nigeria National Water Policy, established in 2004, aims to ensure sustainable access to safe and sufficient water for domestic, agricultural, industrial, and environmental needs (Nwokediegwu, Adefemi, Ayorinde, Ilojiyanya & Etukudoh, 2024). However, the country struggles with inadequate infrastructure, inefficient water management, and pollution. According to the World Health Organization (2020), approximately 60 million Nigerians still lack access to basic

drinking water services, and over 100 million lack access to adequate sanitation. Efforts to improve water provision include the Water, Sanitation, and Hygiene (WASH) program, which focuses on increasing access to clean water and sanitation facilities. However, the implementation has been hindered by issues such as funding shortfalls, governance problems, and climate change impacts, which exacerbate water scarcity in certain regions.

Mandera County, situated in northeastern Kenya, experiences severe water scarcity due to its arid climate, receiving an average annual rainfall of just 255 mm, making it one of the driest areas in the country. As of 2022, only 32% of the county's population had access to safe drinking water, far below the national average of 59% (Water Services Regulatory Board, 2021). The population grew from 867,457 in 2019 to approximately 940,000 in 2023, increasing pressure on the already limited water resources (KNBS, 2022). The county's water supply, primarily reliant on boreholes and shallow wells, remains inadequate, with only 15% of households having piped water connections (Kenya National Bureau of Statistics, 2022; Water Services Regulatory Board, 2023). Development of water infrastructure is hindered by limited finances Mandera requires an estimated KES 5 billion (about \$46 million USD) to achieve universal water access (Mandera County Government, 2023). Additionally, the county's vast, sparsely populated geography and recurring conflict primarily among pastoralist communities over water access further complicate water provision services.

1.1 Statement of the Problem

Evidence from existing empirical studies suggests that the implementation of national water policies provides mixed results with regard to their effect on water service provision. For instance, there is extensive evidence indicating a positive and significant relationship between national water policy implementation and improved water service provision in Tanzania (Nganyanyuka et al. (2018); Marks and Kumpel (2018) in Kenya; Liddle and Fenner (2017) in Uganda; Koehler et al. (2020) in Kenya, Uganda, and Ethiopia; Oates et al. (2019) in Ethiopia).

The Kenya National Water Policy 2021 was designed to ensure sustainable water resource management and equitable access to clean water. However, key gaps exist in its implementation in Mandera County, where water scarcity remains a persistent challenge (Suda, Sušnik, Masia & Jewitt, 2024). The policy outlines strategies such as decentralized water governance, increased infrastructure investment, stakeholder collaboration, and climate resilience integration, yet these have not been fully realized (Eweet & Muna, 2022). Weak institutional capacity, inadequate funding, and ineffective enforcement mechanisms hinder progress, leaving many communities reliant on unsafe or distant water sources. In Mandera, harsh climatic conditions, coupled with poor water infrastructure and resource mismanagement, makes the crisis worse. Similar challenges are observed in Turkana, Marsabit, and Ethiopia's Afar region, where fragmented policy execution leads to unreliable water access (Hassan, 2025).

The majority of these studies were carried out in diverse geographic locations under different conditions, utilizing distinct methodologies and variables. As a result, this creates contextual, methodological, and conceptual gaps. The current study sought to fill these knowledge gaps by using specific proxies tailored to Mandera's unique challenges, such as the availability and functionality of water infrastructure, stakeholder partnerships, climate change integration, water catmint protection and capacity building. In light of the aforementioned empirical gaps, this study delved into the assessment of the effect of the implementation of the national water policy (2021) on the provision of water services in Mandera County, Kenya. The purpose of this study was

therefore to determine the effect of stakeholder partnership on the provision of water services in Mandera County.

1.2 Research Objective

To determine the effect of stakeholder partnership on the provision of water services in Mandera County.

1.3 Research Hypothesis

H₀: There is no significant statistical association between stakeholder partnership and the provision of water services in Mandera County.

2.1 Empirical Review

Pinto, da Cruz, and Marques (2015) conducted a study to investigate the practice of partnering with public and private entities for water service provision in Portugal. Through a case study approach, the researchers explored the benefits and challenges associated with such partnerships and provided insights into their implementation. Data was collected through interviews, document analysis, and on-site observations, with qualitative methods used to identify patterns and themes. The findings revealed that these partnerships can enhance efficiency, cost-effectiveness, service quality, infrastructure development, and customer satisfaction in water service provision. However, challenges such as organizational differences, coordination issues, and conflicts of interest were identified. The study emphasized the importance of a well-defined regulatory framework and effective governance mechanisms to address these challenges. Considering the context of Mandera County and the National Water Policy, further research is needed to assess the impact of accelerated partnerships on water service provision in the county. This study could examine the challenges, opportunities, and alignment between the county's water policy goals and partnering with private entities.

Inha, Katko and Rajala (2019) conducted a study to investigate the impact of clarifying rules and roles on cooperation in water services in Finland. Through qualitative research using a case study design, the researchers examined multiple cases from different regions to gain a comprehensive understanding. Data were collected through interviews, observations, and document analysis, involving representatives from various organizations, government agencies, and local communities. Thematic analysis was used to identify common themes and patterns. The findings of the study indicated several significant outcomes. Firstly, clarifying rules and roles positively influenced cooperation among stakeholders, reducing conflicts and uncertainties and promoting better coordination. Secondly, improved cooperation facilitated enhanced communication, leading to better decision-making and problem-solving. Thirdly, the clarification of rules and roles fostered trust and accountability among stakeholders, increasing transparency in water management practices. Lastly, the study highlighted that improved cooperation through rule and role clarification contributed to more sustainable water management, empowering stakeholders to address challenges, efficiently manage water resources, and implement long-term strategies.

Ruiters and Matji (2016) focused on understanding public-private partnerships (PPPs) in funding and financing water services infrastructure in South Africa. The study aimed to establish a conceptual framework and propose suitable models for implementing PPPs in South African municipalities. Employing a qualitative research approach and a case study design, the researchers investigated funding and financing mechanisms by interviewing key stakeholders and conducting a literature review. The study's findings contribute valuable insights into PPP implementation for

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water services infrastructure. A conceptual framework was developed, offering a structured approach for implementing PPPs in municipalities. The researchers proposed various models, such as concession contracts, management contracts, and lease agreements, highlighting their advantages and disadvantages. Stakeholder involvement, transparency, accountability, and proper regulation were identified as crucial factors for successful PPP implementation, ensuring accessible, affordable, and high-quality water services. Given the implementation of the National Water Policy, in 2021 in Mandera County, a research gap exists regarding the effect of accelerated partnerships on water service provision in that specific context. Further research could explore the influence of the policy on PPP adoption and implementation in Mandera County. It could examine the impact of accelerated partnerships on water service accessibility, affordability, and quality while considering challenges and opportunities within the policy framework.

Obosi (2017) conducted a study to assess the effectiveness of public-private partnerships (PPPs) in improving various aspects of water service delivery, such as accessibility, affordability, quality, and sustainability in Kenya. The study utilized a mixed-methods approach, combining quantitative analysis and qualitative research methods. Data were collected through surveys, interviews, and focus group discussions involving stakeholders from the public and private sectors in selected regions of Kenya. The findings of the study highlighted the positive impact of PPPs on water service delivery in Kenya. The research revealed that these partnerships have improved access to water services and enhanced affordability. The quality of water supplied by PPPs was found to be superior to that provided by the public sector. Furthermore, the study showed that PPPs contribute to the sustainability of water service provision in the examined regions. While Obosi's study provided valuable insights, further research is needed to specifically examine the effect of accelerated partnerships in Mandera County within the context of the implementation of the National Water Policy, 2021. This research is essential due to the unique challenges faced by Mandera County, located in an arid and semi-arid environment. Understanding how accelerated partnerships can address these challenges and improve water access, quality, and sustainability in the region is crucial.

2.2 Theoretical Literature

The study was anchored on institutional theory. This theory was first introduced by DiMaggio and Powell in 1983. The theory states that organizational behavior is largely shaped by the established rules, norms, and beliefs within the institutional environment. Organizations adapt to these external influences to maintain legitimacy, ensure stability, and secure necessary resources. This theory emphasizes the role of social and cultural factors in shaping organizational structures and operations. Rather than being solely driven by rational decision-making focused on efficiency, organizations are deeply embedded in broader social and cultural contexts, where institutional pressures play a key role in determining their practices and frameworks (Meyer & Rowan, 1977; Zucker, 1977; Scott, 2001). The theory challenges the idea that organizations are purely rational entities driven by efficiency and competition.

Institutional Theory argues that organizations operate within a social framework of norms, values, and taken-for-granted assumptions about what constitutes appropriate or acceptable economic behavior. These institutional forces lead organizations to adopt similar structures and practices within their field, a process known as institutional isomorphism (DiMaggio & Powell, 1983; Deephouse, 1996; Mizruchi & Fein, 1999). DiMaggio and Powell (1983) identified three mechanisms of institutional isomorphism: coercive (resulting from political influence and

legitimacy problems), mimetic (stemming from standard responses to uncertainty), and normative (associated with professionalization).

Institutional Theory has been particularly influential in explaining organizational behavior in public and non-profit sectors, where market pressures may be less intense, and legitimacy concerns more prominent (Frumkin & Galaskiewicz, 2004; Ashworth et al., 2009; Verhoest et al., 2007). In the context of water policy and service provision, the theory can help explain why certain practices or structures are adopted across different regions or countries, even when they may not be the most efficient solutions for local conditions. For example, the widespread adoption of particular water management models or technologies might be better explained by institutional pressures than by their proven effectiveness in each specific context (Fuenfschilling & Truffer, 2014; Mukhtarov & Gerlak, 2013; Ingram & Lejano, 2009). Institutional Theory has evolved to recognize that organizations are not merely passive recipients of institutional pressures but can also strategically respond to and even shape their institutional environments (Oliver, 1991; Lawrence, 1999; Pache & Santos, 2010). Oliver (1991) proposed a range of strategic responses to institutional processes, from passive conformity to active manipulation. This perspective is particularly relevant in studying how local water management bodies in places like Mandera County might navigate national policies and international best practices while addressing local needs and constraints.

This theory focuses on how institutions (formal and informal rules, norms, and structures) shape behavior and outcomes. This theory helped explain how institutional arrangements in Mandera County affect water policy implementation and service provision. It's particularly relevant for examining accelerated partnerships and capacity building objectives. Institutional Theory sheds light on how national policies are interpreted and implemented at the local level, how partnerships are formed and sustained, and how capacity building efforts are informed by institutional norms and expectations (Obosi, 2011; Ogendi & Ong'oa, 2009; Nyanhaga, 2016). This theory was integral to this study in explaining both the challenges and opportunities in implementing new water management practices, particularly in areas where traditional methods or existing institutional arrangements may conflict with proposed changes (Mumma, 2007; Gachenga, 2012; Cherlet & Venot, 2013).

2.3 Conceptual Framework

A conceptual framework serves as a theoretical model that defines and categorizes the key constructs of a study while illustrating their relationships. According to Mugenda and Mugenda (2003). Figure 1 shows the conceptual framework.

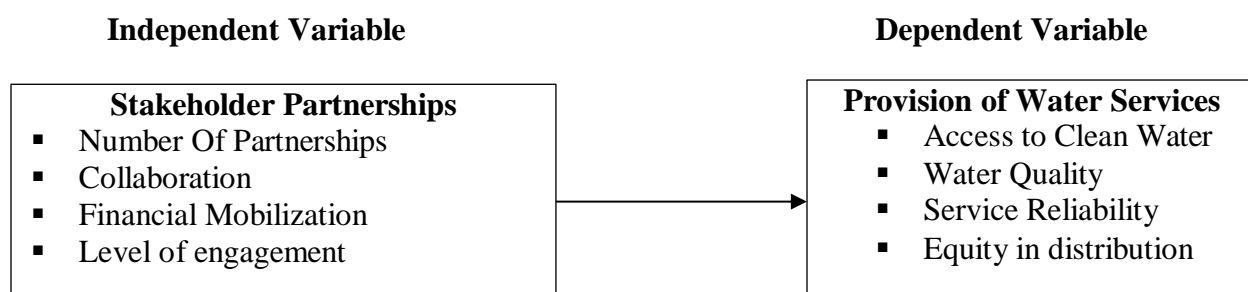


Figure 1: Conceptual Framework

Source: Author (2025)

3.0 Research Methodology

The study adopted the pragmatism philosophy due to the nature of the research questions. The study investigated climate change integration. This required methodological approach to thoroughly understand their impact on water provision. Applying a pragmatic approach allows the researcher to employ both qualitative and quantitative methods, thereby leveraging the strengths of each (Crossan, 2003). This mixed- method approach is important in providing a comprehensive understanding of the relationship between the independent variables and the dependent variable of water provision. According to assertions by Goldkuhl (2012), the flexibility of pragmatism philosophy emphasizes practical solutions and the usefulness of findings, bridging the gap between positivism and interpretivism. Pragmatism philosophy acknowledges the value of both objective, measurable data (consistent with positivism) and subjective information (in line with interpretivism).

This study employed a descriptive survey research design. This design was suitable because it allowed for the systematic collection of data from key stakeholders involved in water services, providing required information regarding the influence of climate change integration (Aquino Lee, Spawn & Bishop-Royse, 2018). The study was carried out in Mandera County, located in the northeastern part of Kenya. The county experiences low and erratic rainfall, with an average annual precipitation of only 255mm, making it one of the driest regions in Kenya (Mandera County Government, 2018). This scarcity of water resources has a profound impact on the lives of its approximately 867,457 residents (Kenya National Bureau of Statistics, 2019).

The study targeted 535 participants drawn from various key stakeholders in Mandera County, including the Water Resources Authority (WRA) Mandera Office, Mandera County Companies, community leaders, representatives from the Non- Governmental Organization (WESCOORD), County Government of Mandera Water Department, and the National Drought Management Authority (NDMA). The study, however excluded the general citizenry of the county as direct respondents, as it focused on policy implementation and institutional effectiveness, which required input from key stakeholders directly involved in water governance and service provision.

The study used Slovin's formula to estimate the sample size (Slovin, 1960) as shown below:

$$n = N / (1 + Ne^2).$$

Whereas:

n = no. of samples N = total population

e = error margin/margin of error which is approximated at $\alpha=0.05$ $n = 535 / [1+535 (0.05^2)]$

$n = 535 / [1+535 (0.0025)]$

$n = 535 / [1+1.335]$

$n = 535/2.335$

$n = 228.877 \sim 229$

To select the study sample, the researcher utilized a probability sampling technique. This method guaranteed each member of the population an equal chance of being selected (Quatember, 2019). Questionnaires and key informant interviews were adopted as a means of collecting data from the study participants. Semi-structured questionnaire allowed for both standardized data collection and

flexibility, enabling respondents to provide more useful information on specific water policy implementation issues in Mandera County. This approach ensured that important topics are covered while allowing for in-depth responses on complex challenges. Further, they can be administered directly or through representatives where people can read and write (Pandey & Pandey, 2021).

Primary data was collected through the administering of structured questionnaires to the selected officers. The questionnaire was self-administered but in cases where clarification was needed the researcher or research assistants assisted. The researcher obtained a letter of introduction from the Department of Development Studies at Kenyatta University and sought a research permit from the National Commission for Science, Technology, and Innovation of the Republic of Kenya (NACOSTI). Two research assistants were recruited and trained and participated in the pretesting before commencing the data collection exercise. The questionnaires was administered from respective offices on a face-to-face survey and drop- and-pick approach. The study conducted diagnostic tests including multicollinearity, normality, heteroscedasticity, and linearity tests before performing regression analysis. These tests ensured the validity and accuracy of the model assumptions.

Upon collecting the questionnaires, the researcher reviewed them for completeness, accuracy, and consistency. Responses from structured questions were coded and entered into SPSS, a statistical software chosen for its flexibility in handling diverse data formats. Descriptive statistics such as mean, variance, and standard deviation summarized the dataset, while qualitative data was coded and analyzed using the same software. The study applied both Pearson's correlation and linear regression analyses to examine relationships between independent variables and water service provision. Correlation analysis assessed the direction and strength of associations, while regression analysis evaluated the combined influence of stakeholder partnerships, watershed protection, and climate change integration. This approach allowed for controlling external factors and determining the collective and individual effects of each independent variable on the dependent variable.

This study used simple linear regression models to link the independent variable to the dependent variable. The statistical model was structured as follows:

$$Y = \beta_0 + \beta X + \epsilon$$

Whereby Y = Provision of Water Services in Mandera County

X= Stakeholder Partnership, β_0 =Constant, β = Coefficient.

ϵ = Error Term.

Ethical integrity was maintained through adherence to confidentiality, anonymity, and the exclusive academic use of collected data. Respondents' identities were protected, and findings would be shared with relevant stakeholders to promote transparency. Data collection occurred in safe, accessible areas with the support of local authorities, and participation was voluntary, with the option to withdraw at any time. Sensitive data to be securely stored and encrypted, and all safety protocols including travel precautions were followed due to Mandera County's security context.

4.0 Findings and Discussion

A total of 229 participants were sampled from the target population comprising staff from Water Resources Authority (WRA) Mandera Office, Mandera County Companies, community leaders, Non-Governmental Organization (WESCOORD), County Government of Mandera Water Department, and National Drought Management Authority (NDMA). Out of the 229 distributed questionnaires, 211 were successfully filled, representing a response rate of 92.1 percent. Therefore, the data collected was considered representative and reliable for drawing valid conclusions on the effect of National Water Policy 2021 implementation in Mandera County.

The study sample was predominantly male (66.8%) and largely composed of young to mid-career professionals aged between 31 and 45 years. Most respondents possessed college or bachelor's qualifications, with a few holding master or PhD degrees, indicating strong educational diversity. The majority had 6–10 years of work experience in Mandera's water sector and had lived in the county for a similar period, reflecting both institutional familiarity and local insight. Overall, the demographic profile suggests a knowledgeable and experienced group well-positioned to inform climate-integrated water policy implementation in Mandera County.

4.1 Descriptive Statistics

4.1.1 Stakeholder Partnership

The study sought to determine the effect of stakeholder partnership on the provision of water services in Mandera County. Ten statements were presented to the respondents to assess their perceptions of the extent and effectiveness of stakeholder partnerships in improving water service delivery. Table 1 presents the descriptive statistics results for the climate change integration variable.

Table 1: Descriptive Statistics on Stakeholder Partnership

| Statement | Strongly Disagree (%) | Disagree (%) | Neutral (%) | Agree (%) | Strongly Agree (%) | Mean | Std. Dev. |
|---|-----------------------|--------------|-------------|-----------|--------------------|-------------|-----------|
| Our organization has increased the number of partnerships in water service provision. | 3.0 | 6.0 | 14.0 | 52.0 | 25.0 | 3.90 | 0.98 |
| Collaboration with our partners has improved water service delivery. | 2.0 | 4.0 | 10.0 | 49.0 | 35.0 | 4.11 | 0.91 |
| Our partnerships have successfully mobilized more financial resources. | 4.0 | 5.0 | 20.0 | 45.0 | 26.0 | 3.84 | 1.03 |
| The level of engagement with our partners is high and productive. | 3.0 | 6.0 | 17.0 | 47.0 | 27.0 | 3.89 | 1.00 |
| Our partnerships have led to innovative solutions in water management. | 2.0 | 7.0 | 16.0 | 46.0 | 29.0 | 3.93 | 0.99 |
| Our partnerships have improved knowledge sharing and capacity building. | 1.0 | 4.0 | 11.0 | 50.0 | 34.0 | 4.12 | 0.88 |
| Our partnerships have enhanced community participation in water projects. | 2.0 | 5.0 | 13.0 | 51.0 | 29.0 | 3.99 | 0.94 |
| Our partnerships have improved the speed of implementing water projects. | 3.0 | 6.0 | 14.0 | 48.0 | 29.0 | 3.94 | 0.97 |
| Our partnerships have attracted more diverse funding sources. | 4.0 | 6.0 | 18.0 | 44.0 | 28.0 | 3.86 | 1.02 |
| Our partnerships have improved the overall efficiency of water service provision. | 2.0 | 5.0 | 12.0 | 50.0 | 31.0 | 4.03 | 0.92 |
| Overall Mean | | | | | | 3.97 | |

Source: Field Data, 2025

The findings presented in Table 1 indicate that majority of respondents perceived stakeholder partnerships as playing a key role in improving water service provision in Mandera County. The results show that 77 percent of the respondents agreed that their organizations had increased the number of partnerships in water service provision, registering a mean score of 3.90 with a standard deviation of 0.98. This suggests a strong collective perception that institutional collaboration has expanded, though the moderate spread in responses indicates some variability in how this trend is experienced across different stakeholders.

Regarding the statement “Collaboration with our partners has improved water service delivery”, 84 percent of respondents agreed with the statement. This statement had the highest mean score of 4.11 and the lowest standard deviation of 0.91, implying a broad consensus that strategic partnerships directly influence service delivery outcomes. This finding underscores the centrality of partnership frameworks in achieving water accessibility objectives under the National Water Policy (2021). Another critical dimension of stakeholder collaboration was financial mobilization. A total of 71 percent of respondents agreed that partnerships had enabled the mobilization of more financial resources, reflected in a mean of 3.84 and a higher standard deviation of 1.03. While this

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is a positive indicator, the greater spread implies that access to funding through partnerships may not be uniformly distributed, potentially revealing disparities between organizations based on capacity or geographic location.

When evaluating productivity in stakeholder engagement, 74 percent of participants agreed that the engagement was high and productive, with a mean score of 3.89. This reflects a relatively strong consensus that engagement practices such as joint planning, progress reviews, and information exchange have been effectively implemented, though the standard deviation of 1.00 indicates a modest diversity in opinions, possibly shaped by the frequency and nature of these engagements. Regarding innovation, three quarters (75 percent) of respondents acknowledged that partnerships had led to innovative solutions in water management (mean = 3.93). This finding suggests that collaboration creates new approaches and adaptive strategies in water provision, which are essential in a climate-vulnerable and resource-scarce region such as Mandera. This agrees with the assertion by Inha, Katko and Rajala (2019) that, clarifying rules and roles positively influences cooperation among stakeholders, reducing conflicts and uncertainties and promoting better coordination. Secondly, improved cooperation facilitated enhanced communication, leading to better decision-making and problem-solving.

Based on the findings, the highest level of agreement was recorded for the statement “Our partnerships have improved knowledge sharing and capacity building,” with 84 percent of respondents in agreement and a mean of 4.12. The low standard deviation of 0.88 further confirms the consistency of responses across institutions, implying that partnerships not only contribute to infrastructure but also significantly enhance institutional learning, training, and technical exchange. Community engagement also was found to be a key benefit, with 80 percent of respondents agreeing that partnerships had enhanced participation in water projects. The mean score of 3.99 and a standard deviation of 0.94 reflect both strong agreement and consistency across responses. This indicates that partnerships are creating platforms for local involvement, which is essential for project sustainability and ownership. This finding concurs with the findings of a study by Obosi (2017) which found positive effect of PPPs on water service delivery in Kenya. The research revealed that these partnerships have improved access to water services and enhanced affordability. The quality of water supplied by PPPs was found to be superior to that provided by the public sector. Furthermore, the study showed that PPPs contribute to the sustainability of water service provision in the examined regions.

Similarly, 78 percent of respondents agreed that partnerships had improved the speed of water project implementation (mean = 3.94), while 72 percent agreed they had attracted more diverse funding sources (mean = 3.86). Although these are favorable outcomes, the relatively higher standard deviations for these two items (0.97 and 1.02, respectively) suggest that the efficiency gains and funding opportunities may vary between organizations. Finally, 81 percent of respondents believed that partnerships had improved the overall efficiency of water service provision, with a mean of 4.03 and a standard deviation of 0.92. This points to the strategic value of collaborative models in improving coordination, reducing duplication, and optimizing resources across stakeholders. This is consistent with observations made by Ataguba (2015) that the informal water sector plays a significant role in areas with limited access to the formal system, driven by inadequate coverage, high tariffs, and poor service quality. Service quality and reliability varied among informal providers, and the sector had both positive and negative impacts on the formal system.

The overall mean score of 3.97 across all ten items indicates that stakeholders in Mandera County generally view partnerships as a highly effective mechanism for enhancing water service delivery. The findings suggest that partnerships are positively influencing multiple aspects of service provision, including innovation, efficiency, funding, community involvement, and institutional capacity. The relatively low to moderate standard deviations also suggest consistent experiences among respondents, reinforcing the effectiveness of stakeholder collaboration as a pillar of the National Water Policy implementation framework.

Thematic Analysis

In addition to the descriptive statistics results above, the study conducted in-depth interviews with officers from the Water Resources Authority (WRA) Mandera Office and the National Drought Management Authority (NDMA) to assess the effect of stakeholder partnerships on the provision of water services in Mandera County. The interviews revealed rich perspectives on how inter-organizational collaborations have influenced project implementation, highlighted achievements, and exposed underlying partnership challenges in the region. The interviews revealed that partnerships have had positive influence on the planning and delivery of water services in Mandera County. Respondents emphasized that collaborative frameworks have helped pool technical expertise, mobilize financial resources, and improve coordination during drought emergencies and project rollouts. Participants from the in-depth interviews were coded as M1 to M8, where “M” denoted Mandera-based key informants drawn from WRA and NDMA. The numeric codes preserved respondent anonymity while maintaining consistency in data analysis and citation.

The interviews with officers from the Water Resources Authority (WRA) and the National Drought Management Authority (NDMA) revealed that stakeholder partnerships have significantly strengthened water service provision in Mandera County. Respondents consistently emphasized that collaboration among county departments, NGOs, and development agencies had improved coordination, reduced duplication of efforts, and enhanced the speed of response during drought emergencies. Joint planning with partners such as UNICEF and the Kenya Red Cross enabled better targeting of priority areas for borehole drilling and water trucking, which improved efficiency and ensured that resources reached the most affected communities.

The findings further indicated that partnerships had improved data sharing and monitoring processes. Through joint programming between NDMA, WRA, and county departments, there was better harmonization of data collection, which minimized delays in project implementation. Respondents noted that coordinated efforts had allowed interventions to reach previously underserved areas such as Rhamu and Ashabito, expanding the geographic coverage of water service delivery. The use of shared data systems and coordinated decision-making structures was seen as key to achieving timely and equitable service delivery outcomes.

Despite these successes, several challenges were identified in establishing and maintaining effective partnerships. Respondents reported that conflicting priorities among partners, unclear role definitions, and donor-driven agendas sometimes hindered collaboration. Competition for visibility and weak coordination mechanisms at the county level were also cited as barriers to sustaining partnerships. In addition, limited institutional capacity, especially among ward-level implementing agencies, constrained effective participation in partnership frameworks. Respondents observed that gaps in understanding partnership protocols and monitoring requirements occasionally led to poor project execution or donor withdrawal.

To address these challenges, both WRA and NDMA had introduced deliberate mechanisms to strengthen coordination and accountability. Respondents reported that quarterly stakeholder review meetings organized by the County Steering Group had become a platform for aligning roles, resolving conflicts, and improving planning. The adoption of GIS-based actor mapping enhanced transparency and data-driven decision-making. Moreover, WRA introduced participatory planning and staff training on partner engagement and resource mobilization to promote collaboration and shared responsibility. The interviews revealed that while partnerships have faced operational constraints, they remain a central driver of improved water service delivery in Mandera County.

4.1.2 Provision of Water Services

The dependent variable in this study was provision of water services in Mandera County. This variable was used to assess the outcomes associated with the implementation of the National Water Policy (2021) in relation to access, quality, reliability, affordability, and overall satisfaction with water service delivery. Table 2 presents the descriptive statistics results for the provision of water services.

Table 2: Descriptive Statistics on Provision of Water Services

| Statement | Strongly Disagree (%) | Disagree (%) | Neutral (%) | Agree (%) | Strongly Agree (%) | Mean | Std. Dev. |
|---|-----------------------|--------------|-------------|-----------|--------------------|-------------|-----------|
| Access to clean water has significantly improved in our service area. | 3.9 | 7.5 | 18.6 | 44.2 | 25.8 | 3.81 | 1.07 |
| The quality of water provided has improved over time. | 5.0 | 9.0 | 19.3 | 43.1 | 23.6 | 3.71 | 1.10 |
| Water services are reliable and consistent. | 6.4 | 10.1 | 21.7 | 41.0 | 20.8 | 3.60 | 1.12 |
| There is equity in the distribution of water services across different areas. | 8.7 | 12.9 | 23.1 | 38.0 | 17.3 | 3.42 | 1.17 |
| Our water infrastructure adequately meets community needs. | 5.5 | 9.3 | 20.6 | 42.7 | 21.9 | 3.67 | 1.09 |
| Water service coverage has expanded significantly in recent years. | 4.2 | 6.1 | 16.8 | 46.5 | 26.4 | 3.85 | 1.01 |
| Water services are affordable for most community members. | 7.1 | 11.6 | 22.0 | 39.0 | 20.3 | 3.54 | 1.15 |
| Water quality meets all relevant health and safety standards. | 6.3 | 9.4 | 18.9 | 43.3 | 22.1 | 3.65 | 1.08 |
| Water services have improved community health outcomes. | 3.5 | 6.7 | 20.2 | 47.1 | 22.5 | 3.79 | 1.01 |
| Customer satisfaction with our water services has increased. | 4.1 | 8.0 | 19.7 | 45.6 | 22.6 | 3.75 | 1.05 |
| Overall Mean | | | | | | 3.68 | |

Source: Field Data, 2025

The descriptive findings revealed a generally positive perception of water service provision in Mandera County, with an overall mean of 3.68, indicating moderate satisfaction among respondents. The highest agreement (72.9%, M = 3.85, SD = 1.01) was for the statement that water

service coverage had expanded significantly in recent years, followed by 70.0% affirming improved access to clean water (M = 3.81, SD = 1.07) and 69.6% recognizing better community health outcomes (M = 3.79, SD = 1.01). Increased customer satisfaction was also noted by 68.2% of respondents (M = 3.75, SD = 1.05), suggesting visible service improvements though with variations across locations. On water quality, 65.4% of participants agreed that quality had improved (M = 3.71, SD = 1.10), and a similar proportion felt that water met safety standards (M = 3.65, SD = 1.08), reflecting progress but with lingering inconsistencies linked to local treatment and maintenance.

However, challenges persist in affordability, reliability, and equity of distribution. Only 59.3% agreed that water services were affordable (M = 3.54, SD = 1.15), while just 55.3% believed that water distribution was equitable (M = 3.42, SD = 1.17), indicating disparities across sub-counties. Reliability was also moderate, with 61.8% agreeing that services were consistent (M = 3.60). These results highlight that while Mandera County has made notable strides in water access, coverage, and quality, significant gaps remain in ensuring affordability, fairness, and reliability of services. The findings call for strengthened infrastructure, equitable allocation of resources, and enhanced quality monitoring to sustain progress and ensure inclusive water service delivery across all communities.

4.2 Correlation Analysis

Correlation analysis aimed to determine the degree of association between the implementation of National Water Policy (2021); stakeholder partnership and the provision of water services in Mandera County. SPSS software was used to compute the Pearson correlation coefficients, and the results are presented in Table 3.

Table 3: Correlation Matrix

| | | Provision of Water Services |
|------------------------------------|---------------------|------------------------------------|
| Provision of Water Services | Pearson Correlation | 1.000 |
| | Sig. (2-tailed) | |
| Stakeholder Partnership | Pearson Correlation | .703** |

Source: Field Data, 2025

The results revealed a moderate positive and statistically significant association between stakeholder partnership and provision of water services ($r = 0.703$, $p < 0.01$). This suggests that improved cooperation among various stakeholders, government agencies, private sector, NGOs, and local communities leads to better water service delivery within Mandera County. This finding agrees with the observation made by Inha, Katko, and Rajala (2019) whose study conducted in Finland emphasized the importance of clearly defined roles and responsibilities among stakeholders in creating cooperation, accountability, and trust. This depicts the importance of stakeholder engagement, especially in decentralized and resource-constrained contexts like Mandera. Similarly, Ruiters and Matji (2016) reported the significance of public-private partnerships (PPPs) in infrastructure development, pointing out that transparency, regulatory oversight, and inclusive engagement are essential for delivering quality water services.

4.3 Regression Analysis

The study also conducted linear regression analysis to assess the relationship between stakeholder partnership and the provision of water services. Table 3 shows model summary between stakeholder partnership and provision of water services.

Table 3: Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------|----------|-------------------|----------------------------|
| 1 | .703a | 0.495 | 0.492 | 0.43762 |

a Predictors: (Constant), Stakeholder Partnership

Source: Field Data, 2025

The results in Table 3 show that the coefficient of determination (R Squared) is 0.495, implying that 49.5% of the variation in the provision of water services in Mandera County is explained by stakeholder partnership. This indicates a strong relationship in which changes in stakeholder engagement significantly affect the delivery of water services. Additionally, the results revealed an Adjusted R Squared of 0.492, implying that after accounting for the number of predictors in the model, 49.2% of the variation in water service provision is attributed to stakeholder partnership. The closeness between R Squared and Adjusted R Squared confirms a good model fit with minimal overfitting. Table 4 shows analysis of variance results.

Table 4: ANOVA Results

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|-------|------------|----------------|-----|-------------|---------|-------------------|
| 1 | Regression | 43.402 | 1 | 43.402 | 226.679 | .000 ^b |
| | Residual | 44.979 | 209 | 0.215 | | |
| | Total | 88.381 | 210 | | | |

a. Dependent Variable: Provision of Water Services

b. Predictors: (Constant), Stakeholder Partnership

Source: Field Data, 2025

The ANOVA results in Table 4 show that the model was statistically significant in explaining the effect of stakeholder partnership on the provision of water services. This is demonstrated by an F-value of 226.679 and a p-value of 0.000, which is less than 0.05 threshold for statistical significance. This confirms that stakeholder partnerships significantly influence water service delivery in Mandera County. Coefficient regression results are presented in 5.

Table 5: Regression Coefficient Results

| Model | | Unstandardized Coefficients | | Standardized t | Sig. | |
|-------|-------------------------|-----------------------------|------------|----------------|--------|-------|
| | | B | Std. Error | Beta | | |
| | | 1 | (Constant) | 1.106 | | 0.116 |
| | Stakeholder Partnership | 0.683 | 0.045 | 0.703 | 15.048 | 0.000 |

a. Dependent Variable: Provision of Water Services

Source: Field Data, 2025

$$Y = 1.106 + 0.683X$$

Where:

Y = Provision of Water Services

X = Stakeholder Partnership

The regression coefficient results in Table 5 reveal a positive and statistically significant relationship between stakeholder partnership and provision of water services ($\beta = 0.683$, $p = 0.000 < 0.05$). This implies that for every one-unit increase in stakeholder partnership, the provision of water services is expected to increase by 0.683 units, holding other factors constant. This significant effect is further supported by a t-statistic value of 15.048, indicating a strong contribution of the predictor to the model. These findings agree with the conclusions made by Inha, Katko, and Rajala (2019) that clearly defined stakeholder roles improve cooperation, reduce conflict, and enhance long-term water management. Their study in Finland showed that role clarity fosters trust and accountability, leading to better service outcomes.

5.0 Conclusion

Stakeholder partnerships have significant influence on provision of water services in Mandera County. Effective collaboration among government agencies, non-governmental organizations, community groups, and development partners serves as a powerful mechanism for addressing the multifaceted challenges of water delivery in arid regions. Through shared responsibilities, knowledge exchange, and pooled resources, partnerships facilitate improved planning, accelerated project implementation, and better responsiveness to community needs. The consistency in stakeholder engagement contributes not only to service efficiency but also fosters trust, ownership, and long-term sustainability. In addition, when local actors feel included in decision-making and implementation processes, their commitment to infrastructure maintenance and behavioral change increases, enhancing overall system functionality. Therefore, creating inclusive, well-structured partnerships is essential for sustaining operational success and promoting resilience in challenging water systems. Institutional frameworks must be strengthened to provide clear role definitions, reduce fragmentation, and support continuous collaboration, especially during emergencies such as droughts and resource shortages.

6.0 Recommendations

County government of Mandera County Government in collaboration with the Ministry of Water, Sanitation and Irrigation, should institutionalize and upscale multi-stakeholder partnership frameworks to improve coordination in water service provision. This can be achieved by establishing County Water Forums that bring together all relevant actors including government agencies, non-governmental organizations, community-based groups, and development partners. Such forums should meet regularly to share plans, are in line projects, and minimize duplication. Additionally, county departments should adopt Memoranda of Understanding (MoUs) to formalize roles, responsibilities, and joint monitoring processes among partners. This approach will improve project synergy, reduce conflicts, and promote the sustainability of collaborative interventions. The forums should also be empowered to develop and monitor annual joint action plans are in lined with national water policy goals and the county's Integrated Development Plan (CIDP).

The study further recommends that Water Resources Authority (WRA) and National Environment Management Authority (NEMA), working in partnership with the Mandera County Government, should intensify enforcement of watershed and catchment protection policies. This should include increasing field inspections, establishing zoned conservation areas, and enhancing punitive measures for environmental degradation such as illegal sand harvesting and deforestation. The agencies should also expand public education campaigns on catchment protection, emphasizing the role of local communities as environmental stewards. In areas with poor compliance, NEMA should establish mobile enforcement units supported by local rangers trained in ecosystem monitoring. Meanwhile, the County Department of Environment should work with community elders and religious leaders to promote local norms and traditional practices that support environmental conservation. These initiatives will ensure that policy enforcement is not only top-down but also socially acceptable and community-driven.

REFERENCES

- Aquino, E., Lee, Y. M., Spawn, N., & Bishop-Royse, J. (2018). The impact of burnout on doctorate nursing faculty's intent to leave their academic position: A descriptive survey research design. *Nurse education today*, 69, 35-40.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120.
- Bazaanah, P., & Mothapo, R. A. (2024). Sustainability of drinking water and sanitation delivery systems in rural communities of the Lepelle Nkumpi Local Municipality, South Africa. *Environment, Development and Sustainability*, 26(6), 14223-14255.
- Brown, C. M., Lund, J. R., Cai, X., Reed, P. M., Zagona, E. A., Ostfeld, A., ... & Brekke, L. (2015). The future of water resources systems analysis: Toward a scientific framework for sustainable water management. *Water resources research*, 51(8), 6110-6124.
- Brown, P. R. (2013). Integrated water resources management: An interdisciplinary approach.
- Cherlet, J., & Venot, J. P. (2013). Structure and agency: Understanding water policy changes in West Africa. *Water Policy*, 15(3), 479-495.
- Cho, W. H. (2019). Role of transfers in the provision of water: An application to public-private partnership and its impact on social welfare.
- Constant, T., Charrière, S., Lioeddine, A., & Emsellem, Y. (2016). Use of modelling to protect, plan, and manage water resources in catchment areas. *Environmental Science and Pollution Research*, 23(16), 15841-15851.
- Crossan, F. (2003). Research philosophy: towards an understanding. *Nurse Researcher (through 2013)*, 11(1), 46.
- de Vito, R., Pagano, A., Portoghese, I., Giordano, R., Vurro, M., & Fratino, U. (2019). Integrated approach for supporting sustainable water resources management of irrigation based on the WEFN framework. *Water resources management*, 33, 1281-1295.

- DiMaggio, P. J. (1988). Interest and agency in institutional theory. *Institutional Patterns and Organizations: Culture and Environment*, 3-21.
- DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48(2), 147-160.
- Eweet, J. T., & Muna, W. (2022). Effects of Water Policy Implementation and Management of Common Pool Resources in Turkana County, Kenya. *Journal of Public Policy & Governance*, 6(2), 72-85.
- Fardowsa, A. (2024). *Assessment of Water Quality in Some Distribution Tankers and Boreholes in Selected Areas of Nairobi County* (Doctoral dissertation, University of Nairobi).
- Gachenga, E. W. (2012). Integrating customary and statutory law systems of water governance for sustainable development: The case of the Marakwet of Kenya. University of Western Sydney (Australia).
- Hall, R. (1992). The strategic analysis of intangible resources. *Strategic Management Journal*, 13(2), 135-144.
- Hassan, H. A. (2025). Egypt's Water Policy and the Challenges of the Grand Ethiopian Renaissance Dam (GERD). In *Nile Basin Politics* (pp. 65-87). Edward Elgar Publishing.
- Health. *Academia Repository*, 4(9), 48-64.
- Inha, L. M., Katko, T. S., & Rajala, R. P. (2019). Improved water services cooperation through clarification of rules and roles. *Water*, 11(10), 2172.
- J. O. (2020). Recent trends and national policies for water provision and wastewater treatment in South Africa. In *Water conservation and wastewater treatment in BRICS nations* (pp. 187-211). Elsevier.
- Koehler, J., Rayner, S., Katuva, J., Thomson, P., & Hope, R. (2020). A cultural theory of drinking water risks, values and institutional change. *Global Environmental Change*, 61, 102061.
- Kumar, R., Singh, C. K., Misra, S., Singh, B. P., Bhardwaj, A. K., & Chandra, K. K. (2024). Water biodiversity: Ecosystem services, threats, and conservation. In *Biodiversity and Bioeconomy* (pp. 347-380). Elsevier.
- Lebu, S., Lee, A., Salzberg, A., & Bauza, V. (2024). Adaptive strategies to enhance water security and resilience in low-and middle-income countries: A critical review. *Science of the Total Environment*, 171520.
- Lee, K. E., Mokhtar, M., Hanafiah, M. M., Halim, A. A., & Badusah, J. (2016). Rainwater harvesting as an alternative water resource in Malaysia: potential, policies and development. *Journal of Cleaner Production*, 126, 218-222.
- Liddle, E. S., & Fenner, R. (2017). Water point failure in sub-Saharan Africa: The value of a systems thinking approach. *Waterlines*, 36(2), 140-166.
- Lu, X., Zhang, X., Xu, Y., Yu, K., & Charles, S. P. (2008). Urban water resources allocation and management: A case study of Beijing. *Water Resources Management*, 22(12), 1759- 1774.

- Marks, S. J., & Kumpel, E. (2018). Understanding user preferences and willingness to pay for water quality improvements in small town water services. *Water Resources and Economics*, 24, 28-45.
- Meyer, J. W., & Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. *American Journal of Sociology*, 83(2), 340-363.
- Mumma, A. (2007). Kenya's new water law: an analysis of the implications of Kenya's Water Act, 2002, for the rural poor. In *Community-based water law and water resource management reform in developing countries* (pp. 158-172). CABI.
- Nairobi City County collaborates for comprehensive water and sanitation policy overhaul: Aligning strategies with National Water Policy 2021. (2023). Retrieved from <https://nairobi.go.ke/nairobi-city-county-collaborates-for-comprehensive-water-and-sanitation-policy-overhaul-aligning-strategies-with-national-water-policy-2021/>
- Nganyanyuka, K., Martinez, J., Wesselink, A., Lungo, J. H., & Georgiadou, Y. (2018). Working with the grain: How amenable to digital transformation are the monitoring and repair of rural water points in Tanzania? *Information Technologies & International Development*, 14, 103-121.
- Nwokediegwu, Z. Q. S., Adefemi, A., Ayorinde, O. B., Ilojiana, V. I., & Etukudoh, E. A. (2024). Review of water policy and management: Comparing the USA and Africa. *Engineering Science & Technology Journal*, 5(2), 402-411.
- Nyanchaga, E. N. (2016). *History of water supply and governance in Kenya (1895-2005): Lessons and futures*. African Books Collective.
- Oates, N., Ross, I., Calow, R., Carter, R., & Doczi, J. (2019). Adaptation and resilience in water management: A review of current approaches. *Water and Climate Change*, 10(2), 434- 457.
- Obosi, J. O. (2017). Impact of public-private partnership on water service delivery in Kenya. *Open Journal of Political Science*, 7(2), 211-228.
- Obosi, O. J. (2011). Decentralized governance in water and sanitation service delivery: A case study of Kisumu municipality, Kenya. *African Journal of Political Science and International Relations*, 5(5), 282-293.
- Ogendi, G. M., & Ong'oa, I. M. (2009). *Water policy, accessibility and water ethics in Kenya*.
- Pache, A. C., & Santos, F. (2010). When worlds collide: The internal dynamics of organizational responses to conflicting institutional demands. *Academy of Management Review*, 35(3), 455-476.
- Pandey, P., & Pandey, M. M. (2021). *Research methodology tools and techniques*. Bridge Center.
- Powell, W. W., & DiMaggio, P. J. (Eds.). (1991). *The new institutionalism in organizational analysis*. University of Chicago Press.
- Public participation and community engagement in domestic water supply management in Kenya. (2024). Retrieved from <https://reachwater.uk/wp-content/uploads/2024/11/Public-participation-and-community-engagement-in-domestic-water-supply-management-v9.pdf>
- Quatember, A. (2019). A discussion of the two different aspects of privacy protection in indirect questioning designs. *Quality & Quantity*, 53(1), 269-282.

<https://doi.org/10.53819/81018102t4377>

- Ruiters, C., & Matji, M. P. (2016). Public-private partnership conceptual framework and models for the funding and financing of water services infrastructure in municipalities from selected provinces in South Africa. *Water Sa*, 42(2), 291-305.
- Scanlon, B. R., Fakhreddine, S., Rateb, A., de Graaf, I., Famiglietti, J., Gleeson, T., ... & Zheng, Scott, W. R. (2001). *Institutions and organizations* (2nd ed.). Thousand Oaks, CA: Sage.
- Shamoo, A. E., & Resnik, D. B. (2009). *Responsible conduct of research*. Oxford University
- Slovin, E. (1960). Slovin's formula for sampling technique. Retrieved on February, 13, 2013.
- Suda, A. O., Sušnik, J., Masia, S., & Jewitt, G. (2024). Policy coherence assessment of water, energy, and food resources policies in the Tana River Basin, Kenya. *Environmental Science & Policy*, 159, 103816.
- United Nations Development Programme (UNDP). (2006). Human development report 2006: Beyond scarcity: Power, poverty and the global water crisis. United Nations Development Programme.
- United Nations Educational, Scientific and Cultural Organization (UNESCO). (2015). Water in a changing world: The United Nations World Water Development Report 2015. United Nations World Water Assessment Programme.
- UN-Water. (2007). Coping with water scarcity: Challenge of the twenty-first century. United Nations.
- Van der Zaag, P., & Savenije, H. H. (2014). Integrated water resources management: Concepts and issues. *Physics and Chemistry of the Earth, Parts A/B/C*, 33, 290-298.
- Van Vliet, M. T., Wiberg, D., Leduc, S., & Riahi, K. (2016). Power-generation system vulnerability and adaptation to changes in climate and water resources. *Nature Climate Change*, 6(4), 375-380.
- World Water Council. (2000). Vision 21: The shared vision of the water community. World Water Council.
- Yu, Y., Pi, Y., Yu, X., Ta, Z., Sun, L., Disse, M., ... & Yu, R. (2019). Climate change, water resources and sustainable development in the arid and semi-arid lands of Central Asia in the past 30 years. *Journal of Arid Land*, 11, 1-14.
- Zucker, L. G. (1977). The role of institutionalization in cultural persistence. *American Sociological Review*, 42(5), 726-743.