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A Comparative Analysis of Kenya's Water Sector Performance Trajectory in the Pre- and Post- Devolution Eras (2009-2022): Evidence from WASREB's Key Performance Indicators

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ABSTRACT

Kenya's water sector has undergone significant institutional and governance transformation over last two decades, most notably following the constitutional entrenchment of devolution in 2010 and its operationalization from 2013. This study undertakes a comparative qualitative analysis of Kenya's water sector performance trajectory during the pre- devolution (2009-2012) and post-devolution (2013-2022) periods, using sector-wide key Performance Indicators (KPIs) published by the Water Services Regulatory Boards (WASEREB). Drawing on descriptive statistics and trend analysis of six core performance indicators namely, water coverage, non-revenue water, hours of supply, metering ratio, revenue collection efficiency, operation, and maintenance cost coverage. The paper assesses whether decentralization of water services has translated into improved service delivery, financial sustainability, and operational efficiency. The findings reveal uneven performance gains with improvements in access, metering, and revenue collection coexisting with persistent structural challenges, particularly high non-revenue water and service reliabilities, financing gaps and governance fragmentation. Policy recommendations emphasize regulatory enforcement, targeted capacity building, and renewed focus on efficiency-driven reforms to align sector performance with Kenya's constitutional rights to water.

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Introduction

Globally, access to safe and affordable water is recognized as a fundamental right and a cornerstone of sustainable development, formally enshrined in the United nations General Assembly Resolution 64/292 [1]. Despite this resolution, water utilities across both developed and developing contexts continue to grapple with persistent challenges related to governance, infrastructure decay, financial sustainability, and service equity [2]. Performance regulation through standardized indicators has emerged internationally as a critical tool for benchmarking service delivery, enhancing transparency, and driving accountability in the water sector [3].

In sub-Saharan Africa, water utilities face compounded challenges, arising from rapid urbanization, fiscal constraints, and institutional weakness. While decentralization reforms have been widely adopted as a strategy to enhance responsiveness and efficiency, empirical evidence on their effectiveness remains mixed (Foster & Hope, 2017). Many countries exhibit modest gains in access to water, alongside stagnation in efficiency indicators such as Non-Revenue Water (NRW) and cost recovery, highlighting the limit of structural reforms without commensurate capacity and investment.

Kenya presents a particularly compelling case, having transitioned from a centralized water governance system under the Water Act 2002 to a developed framework following the Constitutional of Kenya 2010 requirement. This constitution lead to the creation of county governments providing a window for the reconfiguration of institutional roles fundamentally assigning the role of provision of water services, including financing and oversight arrangements to the devolved units (the county governments). The regulatory role through WASREB, remained centralized as a national responsibility. WASREB tracks water providers' performance through standardized KPIs leading to publication of annual water services providers' performance reports [4]. This paper leverages these indicators to interrogate whether devolution has altered the trajectory of water sector performance between 2009 and 2022.

Background of the Water Sector in Kenya: Legal and Regulatory Framework

Kenya's contemporary water governance architecture, finds anchorage in several key legal instruments. The water sector reforms, which were undertaken in early 2000s, lead to the enactment of Water Act 2002, introduced commercialization, of water utilities and an independent regulator. Under this Act, the sector was centralized under the Ministry of Water and Irrigation. In the Pre-Devolution era, the water sector was characterized by bureaucratic bottlenecks and inequitable resources distribution [5]. The Constitution of Kenya 2010 subsequently entrenched access to water as a socio-economic right (Article 43) and devolved water services provision to county governments. Consequently, Post-Devolution era operationalized by the Water Act 2016, aligned

the sector's institutions with the devolved system, clarifying the roles of national entities such as WASREB, the Water Resources Authority, and the Water Sector Trust Fund (WSTF). The mandate of provision of water services was therefore, devolved to the 47 county governments. The Water Services Regulatory Board retained the regulatory authority, including performance benchmarking and tariff oversight. This structure aimed to balance local accountability with national standards.

Problem Statement

Despite sustained reforms and increased regulatory oversight, Kenya's water sector continues to exhibit persistent challenges, notably high Non-Revenue Water, intermittent supply, and uneven access across regions. There is limited systematic analysis comparing pre- and post- devolution performance trajectory using consistent regulatory indicators. This study address this gap by examining WASREB's KPIs over a thirteen- year period to assess whether devolution has substantively improved water sector performance.

Literature Review

Existing literature highlights the centrality of governance and institutional design in shaping water sector outcomes. Decentralization is often associated with improved accountability and service alignment with local needs, yet its success depends heavily on administrative capacity and fiscal autonomy [6]. Studies on Kenya's water sector suggest that while regulatory reforms have enhanced transparency, operational efficiency gains have been modest [5]. WASREB's benchmarking framework has been praised for improving disclosure, but scholars note that performance improvements have been incremental rather than transformative [7].

Theoretical Framework

This study is anchored in decentralization theory and institutional governance theory. Decentralization theory posits that transferring service delivery responsibilities to lower levels of government enhances efficiency and accountability when local capacity exists [6]. Institutional governance theory emphasizes that regulatory effectiveness depends on enforcement capacity, incentives, and resource availability [8]. Together, these frameworks guide the interpretation of KPI trends across governance regimes.

Research Objectives and Questions

Research Objectives

- To analyze trends in Kenya's water sector performance between 2009 and 2022 using WASREB KPIs
- To compare performance outcomes in the pre- and post-devolution periods
- To compare the extent to which devolution has influenced efficiency, access and financial sustainability.

Research Question

- How has the Kenya's water sector performance evolved across key KPIs between 2009 and 2022?
- What differences are observable between the pre- and post-devolution periods?
- What governance and policy implications emerge from observed performance trends?

Research Methodology

The study adopts qualitative research approach, relying on descriptive statistical analysis of secondary data. Sector-wide KPI data were extracted from WASREB Impact Reports covering fiscal years 2009/10 -2021/22.

Indicators were analyzed through trend comparisons and period averages to support interpretive assessments rather than causal inference.

Results and Data Analysis

Descriptive Statistics of Key Performance Indicators

The descriptive analysis of the 14-year reveals a mixed picture of sector performance, characterized by sustained progress in specific coverage areas juxtaposed against alarming stagnation in others.

Table 1: Comparative Summary of Key performance Indicators: Pre and Post Devolution Eras (2009-2022)

KPI	Pre-Devolution Mean (2009-2013)	Post-Devolution Mean (2014-2022)	Absolute Change in Mean (PP)	Performance Trajectory Insight
Water Coverage (%)	49.4	57.1	+7.7	Consistent upward trajectory slightly accelerated.
Sewer Coverage (%)	17.8	16.7	-1.1	Significant stagnation/decline.
NRW (Non-Revenue Water) (%)	43.2	45.7	+2.5	Marginal deterioration in system efficiency.
Water Quality (%)	86.0	92.9	+6.9	Steady improvement in compliance.
Hours of Supply (Hours)	15.2	13.5	-1.7	Reduced operational reliability.
Metering (%)	74.0	92.3	+18.3	Strongest gain; focus on commercial operations.
Collection Eff. (%)	83.6	91.9	+8.3	Strong financial discipline improvement.
O&M Coverage (%)	103.8	99.8	-4.0	Operational self-sufficiency maintained near 100%.
Staff Productivity (staff/1k connections)	6.8	6.8	0.0	No average improvement in capacity utilization.

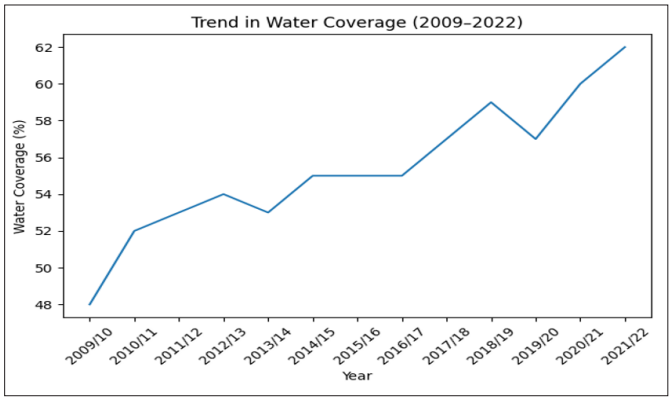
Findings and Discussions

Performance Outlook

Water coverage demonstrated consistent growth through the entire period, rising from 46% in 20029 to 62% in 2022. Water Quality a measure of compliance with standards, also exhibited robust and sustainable improvement. Reaching 95% compliance by 2022,

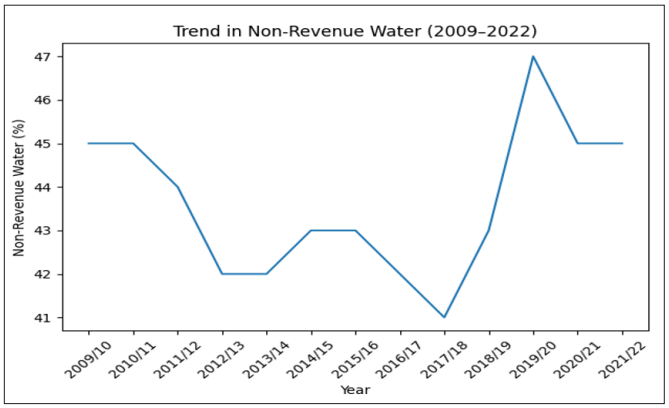
suggesting that the regulatory function responsible for monitoring quality successful maintained standards across the transition.

In stark contrast, Sewer Coverage exhibited the sector's most worrying trend. Starting at 19% in 2009, it saw a decline to 16% by 2013 and marginally recovered to 17% by 2022. This stagnation confirms a persistent failure to achieve substantial infrastructure expansion.



Efficiency Gains and Operational Losses

The devolution shock created a clear divergence between commercial and operational efficiency. Non-Revenue Water, which measures system leakage and commercial losses, improved slightly during the pre-devolution period (45% down to 42% by 2013). However, post-devolution, this trend reversed, fluctuating widely and setting at 45% in 2022. This stagnation in NRW reduction, hovering around a mean of 45.7% post 2014 indicates a chronic inability to manage network losses and prioritize major capital maintenance, which is essential for long-term system health.



Service reliability, measured by Hours of Supply, also suffered, declining from a pre-devolution mean of 15.2 hours to 13.5 hours post- devolution. This reduction suggests worsening service quality for connected customers, possibly linked to increase NRW.

Crucially, the metric for Staff Productivity, calculated as the number of staff per 1,000 connections, showed no net improvement, maintaining a static mean of 6.8 across the entire 14- year period.

Financial and Commercial Metric Success

The most decisive quantitative success of the Post-Devolution era lies in the financial and commercial indicators, largely reflecting the sector's intense focus on market readiness. Metering rose significantly from 80% in 2013 to 96% in 2022, representing an 18.3% point increase in the mean. Collection efficiency similarly soared from 87% in 2023 to 94% in 2022.

O&M Cost Coverage, which measure operational self-sufficiency through user fees, remained stable near or above the 100% benchmark throughout the entire period (mean 103.8% pre-devolution, 99.8% post-devolution). This stability confirms that the regulated WSPs are, on average, covering their running costs through tariffs, a prerequisite for commercial investment, yet this sufficiency provides little margin for financing massive capital expenditure required for network expansion and refurbishment.

Conclusion

Kenya's water sector has undergone significant transformation since the advent of devolution. The qualitative evidence suggests that devolution has delivered tangible gains in water service coverage, accountability, and regulatory compliance. Nonetheless, persistent inefficiencies especially high NRW, financial instability, and inequalities highlight the need for deeper reforms.

Policy Recommendation

- Adopt performance based financing, linking WSP investment to KPI improvements.
- Scale up NRW reduction programmes, prioritizing metering, network rehabilitation, and digital monitoring.
- Enhance capacity-building for low-performing WSPs
- Promote equity-focused investment frameworks, targeting underserved areas.

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