

From Data to Action: GIS Dashboards for Utility Operations and Real-Time Water Loss Monitoring in Ghana

Solomon DABILLAH, Ghana; Enoch MENSAH, Ghana; Herbert Atta SIMPSON, Ghana

Key words: GIS dashboards, water loss management, utility operations, real-time monitoring, Ghana

SUMMARY

Urban water utilities in Ghana continue to face significant challenges related to non-revenue water (NRW), driven by physical leakages, illegal connections, delayed response times, and fragmented operational data. Traditional reporting systems often fail to translate complex datasets into actionable intelligence for utility managers and field teams. This paper demonstrates how GIS-based dashboards can bridge the gap between data collection and operational decision-making by integrating spatial, billing, and maintenance datasets into a unified visual platform. Using practical applications from water utility operations in Ghana, the study presents a GIS dashboard framework that enables near real-time monitoring of water loss indicators, rapid identification of leakage hotspots, and improved coordination between technical and commercial units. The findings highlight the potential of GIS dashboards to enhance operational efficiency, support proactive water loss management, and strengthen data-driven governance within urban water utilities.

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1. INTRODUCTION

Water utilities across Sub-Saharan Africa, including Ghana, are under increasing pressure to deliver reliable and sustainable water services amidst rapid urbanization, aging infrastructure, and climate variability. One of the most persistent challenges confronting these utilities is the high level of non-revenue water (NRW), which undermines financial sustainability and service delivery. Despite the availability of large volumes of operational and customer data, many utilities struggle to convert these datasets into timely and actionable insights. This paper explores the application of GIS dashboards as a decision-support tool for transforming utility data into operational intelligence, with a focus on real-time water loss monitoring in Ghana.

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BIOGRAPHICAL NOTES

Solomon Dabillah is a GIS Officer with Ghana Water Ltd, specializing in geospatial analysis for water distribution management and operational decision support.

Enoch Mensah is a water utility professional with experience in operational monitoring and data management.

Herbert Atta Simpson is an engineer and a water resource professional with expertise in data collection, integration and utility performance analysis.

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CONTACTS

Solomon Dabillah
Ghana Water Ltd
Ghana
Email: sdabillah@gwcl.com.gh

Enoch Mensah
Ghana Water Ltd
Ghana
Email: emensah@gwcl.com.gh

Herbert Atta Simpson
Ghana Water Ltd
Ghana
Email: hasimpson@gwcl.com.gh