POLICY BRIEF, AUGUST 2016

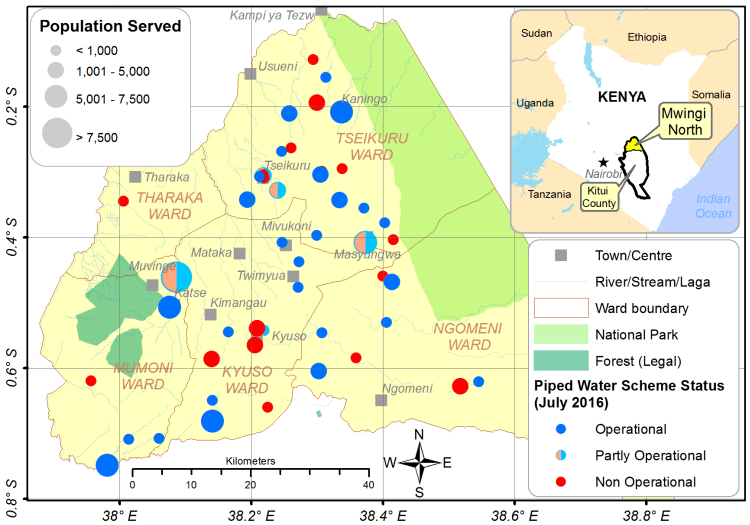
Maintaining Africa's water infrastructure: findings from a Water Audit in Kitui County, Kenya

A lack of information about previous investments and current status of infrastructure creates a challenge for those responsible for water service provision (national and sub-national governments and agencies). An audit of infrastructure in one sub-county of Kitui County, Kenya seeks to provide a detailed inventory of rural and small town piped water schemes and begins to meet the information deficit, piloting a methodology that can be used county-wide. Here we present key results and outline the implications for attaining universal service delivery.

Key findings

1. **Infrastructure:** 48 piped water schemes were documented with over 110,000 water users comprising 430 villages, 49 schools, 8 clinics, 1 hospital and 260,000 livestock. Assets include 124km of pipeline, 1,660m^3 of water storage, 78 kiosks, 44 submersible pumps, 31 gensets and 17 solar systems.

2. **Capital investment:** An estimated Ksh200m (2 million USD) has been invested in infrastructure, 55% since 2006, with NGOs and bilateral donors the main funders (43%), followed by National Government (31%) in terms of number of schemes. This is based on 42% of schemes for which data is available.



3. **Water resources and quality:** Groundwater is the dominant water source, supplying 94% of piped schemes. More than half (57%) of groundwater samples showed TDS > 1,500 ppm, indicative of high levels of salinity and restricting some uses such as drinking, while one-third of schemes have water resource shortages in the dry season (Aug-Oct). There is no water quality monitoring or treatment in 96% of schemes.

4. **Operation and maintenance:** Over half the schemes are operational (55%) and 10% are partly functional. The main cause of breakdown is reported as pump and genset failure.

   Average breakdown times vary from three months for a minor repair to ten months for a major repair.

   Schemes reported a total of 1.7 million Ksh (17,000 USD) spent on repairs since commissioning, less than 1% of the original capital investment, with over 62,000 people currently affected by poor functionality. Ensuring high quality repair/rehabilitation and ongoing preventive maintenance is critical for obtaining the full benefits of the initial capital investment.

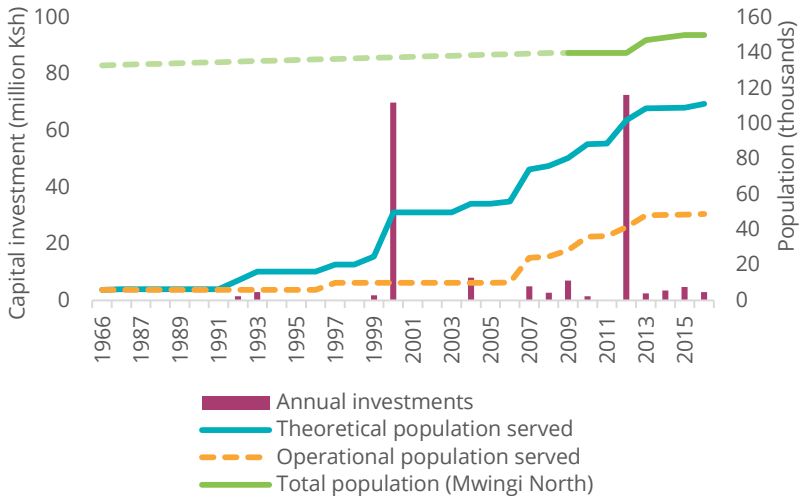
5. **Management and finance:** Three in four schemes are managed by community-based organisations (CBOs) with low and variable revenue collection, of which 75% is spent on staff and fuel costs and 14% on minor repairs.

Two-thirds of CBOs are officially registered and have a constitution but less than half have a bank account. A third of schemes estimated they collect <50% of revenues. There is limited metering (40% with a main meter, 7% with records) and financial record keeping (65%). A total of 438 committee members and 78 employees are involved in the sector.

6. **Willingness to pay for a professional maintenance service:** Over eight in ten schemes would consider joining FundiFix Ltd's maintenance programme offering a pre-payment model for a guaranteed servicing and repair service. FundiFix is a private company offering maintenance services in Kitui and Kwale Counties.

7. **What next?** Up-to-date, relevant data is crucial for decision-makers in managing water services and resources. The water audit methodology can be scaled-up to cover whole counties/ countries, providing a database for asset management and investment decisions that can be updated using mobile technology.

Investments and cumulative population served



The data helps us to pose strategic questions on the practicalities of providing universal access within a context of limited resources and the legacy of past investments, such as:

- How can future investments in water supply infrastructure and institutions be more effectively structured and monitored?
- Which schemes merit rehabilitation or replacement and where is there inadequate or surplus water supply infrastructure?
- What cost-sharing arrangements for maintenance are feasible and acceptable?
- What are the management capacity needs for system operators?
- How can regulation be extended to cover small schemes?

Methodology

The Water Audit methodology was designed to be replicable in collating major waterpoint data in a cost-effective manner. Led by Oxford University researchers, the survey instrument was co-designed with Kitui County Government's Ministry of Water, Irrigation and Agriculture, and UNICEF. The survey was administered in July 2016 with a team of four local and technically-proficient enumerators. Piped water schemes in Mwingi North were identified and meetings pre-arranged with the management, assisted by local government staff. Information was collected on location (GPS coordinates, GSM signal), technical design and operation, maintenance history, water demand, water quality, monitoring systems and financial management. Photos of documentation, meter reading records and of physical infrastructure complement the dataset. Water quality testing (pH, EC, TDS, temp) was carried out with handheld meters.

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