
WAKIRU & KAYAGA

36th WEDC International Conference, Nakuru, Kenya, 2013**DELIVERING WATER, SANITATION AND HYGIENE SERVICES
IN AN UNCERTAIN ENVIRONMENT****Analysis of trends in the performance of urban water
utilities: a case study of Embu Water and Sanitation
Company***Wakiru & Kayaga, Kenya***BRIEFING PAPER 1657**

Poor performance and lack of sustainability of water utilities in developing countries begs for a reform of institutional and policy environment in which they operate. Kenyan Water Act 2002 was passed, in part, to address reforms to the institutional framework and improving finance mechanisms. This case study assessed the institutional capacity of Embu Water and Sanitation Company (EWASCO) and the trends in performance since the water sector reforms. Interview guides, review of documents related to EWASCO, observations and literature review were used to collect information on several performance categories. EWASCO has been accorded substantial but regulated level of managerial and policy autonomy. A strategic management concept has been used to derive a solution-oriented planning framework for its operations. Performance efficiency has been achieved through commercial, managerial and technical best practises leading to improved financial sustainability enabling EWASCO to increase service coverage. EWASCO has some useful lessons for other utilities.

Background of the research

Prior to Kenyan water sector reforms in 2002 the government played roles of water resources manager, regulator, and water services provider (Dach, 2007). The existing institutional setup engendered inefficiency, weak service delivery and poor financial performance. Hence, the Kenyan Government prioritized reforming water sector under the overall policy framework of the Economic Recovery Strategy for Wealth and Employment Creation. The Water Act 2002 was passed to establish and legalize implementation of the National Water Policy that set four key policy objectives: water resources management, water and sewerage development, reforms to the institutional framework, and improving finance mechanisms for water sector investment. The Act mandates Water Service Boards to provide water and sanitation services, but through an agent, Water Service Providers (WSPs). This case study focuses on Embu Water and Sanitation Company (EWASCO) which was incorporated in March 2003, but has practically existed since July 2005. The company was contracted by Tana Water and Services Board (TWSB) to take over provision of water and sanitation services in Embu Municipality from the Department of Water and Sanitation of Embu Municipal Council (EMC). The engagement is through Service Provision Agreement (SPA) prepared by the Water Services Regulatory Board WASREB. The SPA details the relationships between the TWSB, the WSP, the WASREB and other related Legislation Acts that guides the stakeholders.

Problem statement

Water is a key resource for sustainable development and is economic good hence requires proper management (WEDC, 2004). However, efficient management of water has remained a challenge in developing countries leading to unsustainability of many institutions that are mandated to provide water services (Mwanza, 2005; Dokosho, 2007; Kalulu and Huko, 2010). Water governance in developing countries such as Kenya has been poor leading to poor performance of water utilities (Mwanza, 2005; Winpenny, 2003; Kwaho, 2009). Management of Information Systems is an important aspect that has

potential for socio-economic and human development (Mwanza, 2005). However, many utilities in developing countries lack effective management information systems to allow adequate monitoring and evaluation and assess their own performance in order to design operational improvements (Mugabi, Kayaga and Njiru., 2006). The inefficiency of public utilities is as a result of suppressed tariffs, overstaffing, high unaccounted-for water, basically a totality of poor governance (Mwanza, 2005). This results to poor service coverage and unsustainability of the utilities requiring a compliment of changing institutional and policy environment in which they operate (Mugabi, Kayaga and Njiru, 2006).

Aim and specific objectives of the research

This research aimed at determining institutional capacity of Embu Water and Sanitation Company (EWASCO) and its performance since water sector reforms. The specific objectives were:

- i) To determine institutional arrangement and autonomy of EWASCO since sector reforms;
- ii) To determine if there has been improvement in management of the water utilities since sector reforms;
- iii) To determine performance efficiency of EWASCO;
- iv) To determine institutional sustainability of EWASCO.

Literature review

The main approach to improving the performance of water utilities prior to the International Drinking Water Supply and Sanitation Decade (1981–1990) was to focus on providing poorly performing utilities with the proper ‘hardware’ to provide the much needed water services (Schwartz, 2008). It was later learnt that technical aspects alone could not improve water service provision. Lack or inadequate project finance, manpower and technical capabilities were main setbacks in achieving goals of water service provision (Schwartz, 2008). Infrastructure particularly provided by the government in developing countries was characterised by inefficient operations, insufficient technical expertise, poor services to consumers, high costs in comparison with per capita income and substantial delays between the time of application and time of connection (Jerome, nd). Therefore, at the end of Drinking Water Decade, it was found inevitable to shift the attention from technical solutions to managerial and institutional solutions in the early 1990s (Schwartz, 2008).

Many performance improvement programs have focused only on changing the utility, but have neglected the institutional environment that surrounds it (Baietti Kingdom and Ginneken, 2006). Therefore, EWASCO may not make a difference in performance unless institutional capacity is appropriately addressed. Various literature on institutional capacity of water utilities (e.g. Mugabi, Kayaga and Njiru, 2006; Cullivan et. al., 1988; Baietti, Kingdom and Ginneken, 2006; and Dokosho, 2007) has categorized institutional capacity in terms of the dimensions of organizational autonomy, leadership, management and administration, commercial orientation, consumer orientation, technical capability, developing and maintaining staff, organizational culture and interactions with key external institutions. This study adapted these dimensions for evaluation of institutional capacity.

Methodology and approach

The field study was carried out in the month of July 2012. The research followed *interpretive case study* in sense that it involved using descriptive data to develop conceptual categories to evaluate the level of performance of EWASCO. A wide range of literature review, interview guides, review of documents related to EWASCO, and observations were used to collect information based on the dimensions of institutional capacity listed above.

Respondents interviewed were the Managing Director and six senior staff of EWASCO, the water utility; a senior official of the Water Services Regulatory Board (WASREB); the Water Reforms Advisor of the Ministry of Water sector reform; Project Officer at Water Services Trust Fund (WSTF) and a Project Officer of Twaweza (EA), a non-governmental organisation involved water advocacy. Qualitative data collected through semi-structured interviews were analysed by descriptive coding of themes; while quantitative information was analysed using Microsoft spread sheets, converted into tables and graphs. The analysis was mainly based on subjective indicators of institutional capacity, with minimal emphasis on objective performance indicators. Results of the analysis were compared with conventional and national benchmarks to infer the performance of EWASCO.

Findings and discussions

Determination of the institutional capacity of EWASCO was built on basis of the dimensions of institutional capacity, as described below:

1) *Organizational autonomy*

EWASCO has been accorded substantial level of managerial and policy autonomy but with 'keen' oversight and regulation by WASREB, through guidelines and rules governing operations of a WSP. The company is also under regular monitoring by TWSB to adhere to policies and regulations of other key institutions of Kenyan water sector. This is largely to ensure consumers get quality services and that the company contributes towards large goal of national development and achievement of Millennium Goals and Kenya Vision 2030.

2) *Leadership*

Leadership of EWASCO is subject to internal and external factors. Good corporate governance to continue having responsive and accountable company. Various stakeholders such as women groups, municipal council, political class, business community, professional associations elect their respective representatives to form the Board of Directors, an aspect that signifies high levels of public involvement, accountability and transparency. Social working environment, open door policy, recognition of the innovative staff performance appraisals, annual interactive retreats of all staff and freedom of expression, all reflect good leadership of EWASCO.

3) *Management and administration*

EWASCO has used the strategic management concept to derive a solution-oriented planning framework for its operations so as to answer four key questions: a) where is the utility now?; b) where do the utility want to be?; c) how might the utility get there?; and d) how does it ensure its success? EWASCO therefore formulated a six year Strategic Plan 2006-2011 with agreed objectives, strategies and 3-year financial projections of which it has substantially accomplished. The company has been structured into various functional departments headed by managers who report to the CEO who in turn report to the Board of Directors. The staffing hierarchy is structured to ensure efficient human resource utilisation.

4) *Commercial orientation*

Information provided by senior managers of EWASCO, which was not independently verified, showed the utility's significant improvement in commercial orientation has led to improved performance and cost recovery with increasing trends. Surplus has increased since 2006, with the exception of 2011, when a relatively small deficit was experienced. Some efficiency and liquidity ratios have been above industrial benchmarks indicating improved performance efficiency. Service coverage has substantially increased in terms of area and household connections. Non-revenue water (NRW) has been reduced from 70% in 2005 to 42% in 2011, and 38% in 2012, as reported to WASREB. However, this performance, though showing an impressive trend, is still above the 25% benchmark set by WASREB. By July 2012, coverage by area had increased to 46% by area which is now 972 km² and 55% by population. Dormant accounts reduced to 12% which is within a benchmark of 20% set by WASREB by year 2011. Metering ratio has been 100% since year 2006. Staff per 1000 connections reduced from 10 in 2006 to 3 in year 2011 which is within a benchmark of 7 to 8 set by WASREB for the sector. All the aforementioned aspects indicate improved performance in commercial orientation, which shows increased institutional capacity.

5) *Consumer orientation*

EWASCO has set departments, procedures and processes, management and administrative systems on basis of putting the consumers first, since it is the key reason for its existence. The Customer Charter provides an informed choice of level of services and the related issues. Awareness creation/public education provided to the public on services provided has positively impacted on public perceptions. Customer involvement is enhanced through information sharing and consumer satisfaction surveys, which collect opinions and preferences of consumers on services offered. Presence of customer care and enquiries offices have yielded prompt complaint resolutions, timely services and good relations with consumers and the general public. EWASCO has factored in affordability by having a lifeline tariff block for household connections and water kiosks for Low Income Areas of the municipality where pro poor charge is US \$0.05 per 20 litres of water container.

6) *Technical capability*

Embu Municipality had insufficient water infrastructure and technical staff, and Non-Revenue Water had reached 70% thereby reducing revenue for operation and maintenance and expansion works. Since EWASCO had to run operations in a commercial setup for improvement of performance and its sustainability, it formulated strategies to improve the aforementioned issues. It has hired qualified and competent technical staff bringing the number to 38 from 2. Standardization of designs to most modern technologies and rehabilitation systems has been enhanced to optimize performance of the water infrastructure. The company has acquired leak detection equipment to monitor water flow and leaks. Installation of master meters has enhanced monitoring of water actually consumed. The management has embraced and encouraged innovations. Water distribution valves that were subject to frequent theft have been replaced by relatively the locally manufactured, low-cost but efficient units; while IT billing system via mobile phone SMS has been set up, and it is efficient, effective and cheaper than postage system.

7) *Developing and maintaining staff*

EWASCO has hired qualified and competent staffs most of whom have undergone skills development in their area of specialization. EWASCO has kept staff turnover to a low level of one staff per year. Incentives are given in terms of increased responsibilities and subsequent reward for their performance. Appraisals to the performing staff are a key tool to motivate them. Since the company encourages and supports innovations, the staffs that have innovated IT billing system and improvised water distribution valves for the main transmission supply lines, both of which have saved the company substantial costs, have been rewarded accordingly. Staffs have been accorded improved working conditions to enhance their morale and performances. Subordinate staffs have been allocated shower rooms and change rooms.

8) *Organizational culture*

Prior to reforms, the culture of department of water and sanitation of Embu municipal council did not encourage efficient performance. As part of the organizational development programme, staffs have been made to understand vision and mission of EWASCO, core values, equal importance of every staff member, develop positive attitudes towards their duties, work under minimal supervision and having ownership of the company. Interaction of staffs at all ranks is encouraged to enhance mutual understanding amongst them. In fact, staffs are expected to apply the principle of customer services to not only the external publics, but also staff from other departments, and the organisational procedures/systems are continuously being improved to revolve around the fundamental principle of 'think customer first'.

9) *Interactions with key external institutions*

EWASCO is subject to rules and regulations set by the other institutions within Kenyan water sector viz: Water Apportionment Board (WAB), Ministry of Water and Irrigation (MWI), Catchment Area Advisory Committee (CAAC), Water Resources Management Authority (WRMA), Water Services Regulatory Board (WASREB), Water Services trust Fund (WSTF) and Tana water Services Board (TWSB).

Summary and conclusions

EWASCO has been accorded a good level of managerial and policy autonomy, although it is overseen by WASREB and TWSB, to ensure that its operations are dispensed in accordance with the water sector regulations and guidelines. The company has been structured into various functional departments composed of qualified and competent staff headed by managers who report to the CEO, who in turn report to the Board of Directors. Capacity development and training has been conducted; staffing hierarchy well strategized to ensure efficient human resource; and staff well facilitated to enable them discharge duties appropriately. Retaining staff enhances overall performance of operations. The utility's Strategic Plan 2006-2011 has been very instrumental in the imminent improved performance of all its operations, leading to good level of financial sustainability, which is well exploited to continuously expand the service coverage. Improved technical capacity has improved performance of water infrastructure through application of appropriate standards and technologies. IT and other similar innovations have enhanced the efficiency and effectiveness of its operations, aspects that indicate effective management. EWASCO's corporate culture revolves along the concept of 'customer is king' for both the internal and external customers.

Improved institutional capacity has led to better performance in service delivery, as can be seen by a selection of perceived performance indicators provided by EWASCO's senior managers, shown in Table 1 below.

Table 1. Performance trends since the formation of EWASCO	
Service coverage	Coverage has increased from 29% of initially allocated 80 km ² in 2005 to 82% by July 2012. Area of supply has been increased to 972 km ² of 46% had been covered by July 2012.
Non-Revenue Water (NRW)	NRW has been reduced from 70% by year 2005 to 42% by year 2011 as reported to WASREB and to 38% as reported in July 2012 is still above 25% bench set by WASREB and recommended for Sub-Saharan countries.
Ratio of dormant connections	Dormant accounts reduced from more than 25%* in 2005 to 12% which is within a benchmark of 20% set by WASREB
Metering ratio	Metering ratio has been 100% since year 2006 as recommended by WASREB from less than 70%* in 2005.
Staff per 1000 connection	Staff per 1000 connections reduced from 10 in 2006 to 3 in year 2011 which is within a benchmark of 7 to 8 set by WASREB
Hours of water supply	Hours of water supply has increased from 1.5 hours/day in 2005 to 24 hours/day by July 2012 which is above the sector benchmark set by WASREB at 20 hours/day
Consumer complaints	Complaints have reduced from 50 per day in 2005 to an average of 10 per day.
Operation ratio	The ratio has been ranging from 0.9 to 1 since 2006 to 2012. WSP recommends ratio of less than 1 while WEDC indicates industrial target of less than 0.6.
Days receivable ratio	This has reduced from 272 since 2006 to 197 in 2012 though the desired target is less than 60 days for water utilities.

*Information provided by senior staff of EWASCO during interviews

Recommendations

The company needs to further improve performance efficiency in order to achieve the recommended industrial financial ratios as follows:

- (i) *Profitability ratios*: to put measures that can enhance improvement of revenue generation as well as checking on administrative and other operating expenses;
- (ii) *Liquidity ratios*: to employ efficiency mechanisms to manage short term obligations in a more efficient way; and
- (iii) *Efficiency ratios*: to improve on Bill collection efficiency and Days receivable ratio. Performance should be improved further towards achieving benchmarks set by WASREB for service coverage of 100% and reducing NRW to 25%. Planning, designing and water optimization can be improved further using EPANET programme, a simulation hydraulic model, to know the real-time water flows and pressures.

Key lessons learnt

- A water service provider should have a strategic management concept to derive a solution-oriented planning framework for its operations where departments, operations, systems and procedures revolve around the fundamental principle of think customer first;
- A water service provider with proper institutional capacity can deliver desirable services towards meeting demand given an appropriate enabling environment by relevant institutions in the water sector;
- Regulation and close monitoring and inspection of a water service provider by the relevant institutions must be a continuous process to ensure customers satisfactorily get services they are willing to pay for; and
- Urbanisation brings about continuous demand for services and facilities, and there is need to develop the institutional capacity of the service provider so as to cope with the increasing challenges arising out of rapid urbanisation and environmental changes.

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References

- Baietti, A., Kingdom, W., Ginneken, M., (May 2006) *Characteristics of Well Performing Public Water Utilities*. Water Supply & Sanitation Working Notes. Water Supply and Sanitation Sector Board of the Infrastructure Network, World Bank Group.
- Cullivan, D., Tippet, B., Edwards, D. B., Rosensweig, F., and McCaffery, J. (February 1988) *Guidelines for Institutional Assessment: Water and Wastewater Institutions*. Washington, DC 20523: U.S. Agency for International Development. WASH Technical Report No 37.
- Dach, S. (2007) *Water sector reform in Kenya: First experiences are positive*. Interview with Engineer Mahboub Maalim, Permanent Secretary of the Kenyan Ministry of Water and Irrigation by Susanne Wymann von Dach, InfoResources, Berne, Autumn 2007.
- Jerome, A. (no date). *Infrastructure in Africa*. University of Ibadan, Nigeria: African Development Bank. Economic Research Papers No. 46.
- Kalulu, K. and Hoko, Z. (July 2010) *Assessment of the performance of a public water utility: A case study of Blantyre Water Board in Malawi*. 10th WaterNet/WARFSA/GWP-SA Symposium: IWRM - Environmental Sustainability, Climate Change and Livelihoods. Elsevier. Physics and Chemistry of the Earth, Parts A/B/C, Volume 35 (Issues 13–14, 2010), pp. 806–810.
- Kwaho (December 2009) *Enhancing Water and Sanitation Governance in Kenya: Human Rights Based Approach to Reforms in the Kenya Water Sector*. Kenya Water for Health Organisation (KWAHO).
- Mugabi, J., Kayaga, S., and Njiru, C. (October 2006) *Strategic Planning for Water Utilities in Developing Countries*. WEDC: Loughborough, UK, Utilities Policy, Issue 1, pp. 365–378.
- Mwanza, D. D. (2005) *Promoting Good Governance through Regulatory Frameworks in African Water Utilities*. Water Utility Partnership, Abidjan, Cote d'Ivoire: IWA Publishing, Water Science & Technology, 51(8), pp. 71–79.
- Ndokosho, J., Hoko, Z. and Makurira, H. (2007) *Assessment of management approaches in a public water utility: A case study of the Namibia water corporation (NAMWATER)*. Civil Engineering Department, University of Zimbabwe, Mount Pleasant, Harare, Zimbabwe: Elsevier Ltd. Physics and Chemistry of the Earth 32, 1300–1309.
- Schwartz, K. (2008) *The New Public Management: The Future for Reforms in the African Water Supply and Sanitation Sector*. Department of Management and Institutions, UNESCO-IHE Institute for Water Education, DA Delft, the Netherlands: Elsevier Ltd. Utilities Policy, 16 (issue 1), pp. 49–58.
- WEDC (1st ed, 2004) *Integrated Water Resources Management*. Postgraduate Module. WEDC: Loughborough University, UK.
- Winpenny, J. (2003) *Financial Water for All: Executive Summary of Report of the World Panel on Financing Water Infrastructure*. World Water Council, 3rd World Water Forum and Global Water Partnership. Additional Resources of Integrated Water Resources Management. WEDC: Loughborough, UK.

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