

*Full Length Research Paper*

## Challenges of water accessibility in the urban centres of Malawi: A case study of Blantyre City

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This study assesses challenges of water supply to urban areas of Malawi since factors obstructing water availability, indicators of water service's delivery, trend of tariff structure and cost recovery's mechanisms and water governance in Malawi have been poorly assessed in the past despite the fact that the country has engaged itself in the improvement of urban water policy. The study was conducted in Blantyre City and data was collected through several methods such as literature review, structured questionnaire, semi-structured interviews and field observations. Blantyre's water utility (Blantyre Water Board) has non-revenue water (NRW) of 40 to 49% and coverage of 75%. Poor governance and low tariffs coupled with urbanization are the main causes of water shortage in the city of Blantyre. Since consultative increase in tariffs could infuse greater efficiency into water supply system, this study recommends that the Government of Malawi should implement the following measures: i) increase budgetary support to urban water utilities, ii) privatize water services and operation, iii) enact urban water and sanitation Act to guide urban water supply, iv) make water utilities autonomous to avoid political meddling and v) institute a regulator for urban water utilities.

**Key words:** Malawi, political meddling, cost recovery, non-revenue water, Blantyre City.

### INTRODUCTION

Globally, access to safe and adequate water resources remains one of the major challenges in developing countries nowadays. Poor provision of safe and adequate water resources has the potential to trigger a global food crisis of the 21st century. This has to do with the fact that everyone has a right to access potable water (United Nations, 2010) and that water is one of the most important public goods. Water constitutes over 70% of the human body and is considered as the most vital

component of life after oxygen (Doe, 2007).

Available trends show that water covers about 70% of the Earth's surface and that only 1% of it is available to human for drinking. A recent report highlights that about 783 million people globally lack access to clean water supply while 2.5 billion people have no access to adequate sanitation (UNESCO, 2013). The importance of water is not only related to drinking. Water also plays a crucial role in washing, bathing, cooking and other

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domestic activities. However, about 6 to 8 million people die annually from consequences of disasters and water related illnesses, inadequate sanitation and poor hygiene practices (Moe, 2006). Water is also the main driver of illnesses such as cholera, dysentery, diarrhea and typhoid (Bradley et al., 2007). Such water related illnesses are often the major cause of premature death in infants. This implies that any process that compromises the supply and distribution of safe water threatens human health, survival, growth and development.

In overcoming the previously mentioned issue, the Millennium Development Goals (MDGs) set a target to reduce by half the proportion of people living without sustainable access to safe drinking water and basic sanitation. This target was a part of the International Decade for Action, Water for Life for the period of 2005 to 2015. Despite such a policy, meeting the MDG for drinking water and sanitation had two major challenges: i) a rapid expansion of urban areas over rural ones, and ii) a massive number of rural people who are not supplied with basic sanitation and safe drinking water. As a result of this, the supply of safe water still remains unsatisfactory. Water scarcity affects more than 40 percent of people around the world. This alarming figure is projected to increase with the rise of global temperatures as a consequence of climate change (Ludi, 2009).

Ensuring universal access to safe and affordable drinking water in the next decade requires substantial economic resources, sustainable technological solutions and courageous political will (Christine, 2006). It also requires more intensive and concerted efforts by all stakeholders to set realistic targets, develop achievable actions plans, provide adequate financial means and human resources to properly bring safe drinking water and basic sanitation to the intended population, especially in Sub-Saharan African regions. Such regions still remain with poor access to drinking water which has increased by 23% and the number of people without sanitation has also increased by over 30% from 1990 to 2004. This trend is also true in the case of Malawi.

Malawi, a water-stressed country with less than 1,700 m<sup>3</sup> of freshwater per capita, experiences remarkable population growth, especially in its urban and peri-urban areas. As the country's population grows, water availability further declines while differences in water delivery among cities are strongly evidenced. As a result, some cities are better served than others, especially in slums. Assessing differences in water delivery may be the starting point to improve water service delivery in cities. Meanwhile, the future water demand projections predicted that Malawi would have less than 1,000m<sup>3</sup> of freshwater per capita by the year 2015 making it a "water scarce" nation. To date, only 65% of Malawi's population has access to improved water and sanitation while the country struggles to ensure proper access to water and

sanitation to all its population. In addition, there is a dwindling supply of safe drinking water caused by an increase in global temperatures as consequence of climate change, a major problem impacting the country in many dimensions (Trocaire, 2015).

Kalulu et al. (2012) states that access to potable water is still a very big challenge in Malawi and nearly 50% of all illnesses recorded in the country are related to water borne diseases.

Available literature on the supply and access to water among urban communities of Malawi tend to emphasize availability of water as one of the critical challenges in the urban water management (Doe, 2007; Murinda, 2011; Hove and Tirimboi, 2011). According to Chipeta (2009) the daily water consumption per capita to some inhabitants in the city of Blantyre is far below standard of 15 litres per person per day as recommended in the sphere standards handbook (The Sphere Project, 2011).

Institutional regulation delivered by District Councils and Water Boards, is weak in urban areas despite the fact that Malawi government has ascribed to the 2015 MDG targets for water and sanitation (WSS). Thus to achieve the 2015 Malawi MDG targets calls for assessing challenges facing water supply in urban centres in Malawi by answering the following questions: (i) what are the factors obstructing water availability in Blantyre City, (ii) what are the indicators of "effective" water service delivery' analysis in Blantyre City, (iii) what are the current trends of tariff structure and cost recovery analysis or mechanisms.

## MATERIALS AND METHODS

This research followed a case study approach. Residential areas of Chirimba and Ndirande in the City of Blantyre (Figure 1) were purposively selected because Chirimba township has a lot of industries that are considered to consume a lot of water while Ndirande has the highest population of 1, 068, 681 (PHC, 2008) and poverty rated at 24% (UN-HABITAT, 2011) with inadequate access to safe water and sanitation facilities than any other suburb of the city and Blantyre Water Board (the sole service provider), were the main sources of data. Systematic sampling was used to get the respondents from the households that were linearly arranged in the study locations while purposive sampling of influential people in their community, business persons, religious leaders and traditional leaders was used to identify key informants.

### Data collection methods and analysis

Data was collected through literature review, structured questionnaires, semi-structured interviews and observations. A total of 161 questionnaires were administered in the two sampled residential areas. The formula recommended by Israel, (2007) shown below was used, to determine the sample size;

$$n = \frac{N}{1 + N(e)^2}$$

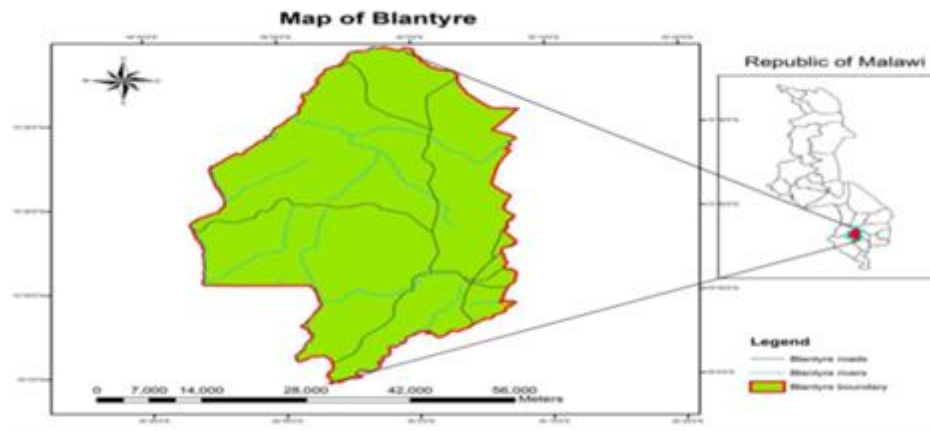


Figure 1. Location of the study area.

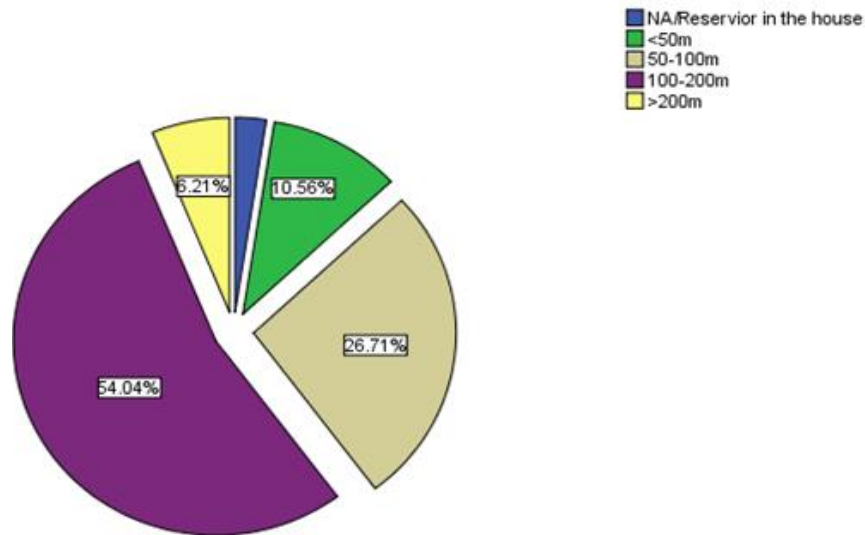


Figure 2. Distance covered to collect water.

Where –  $n$  is sample size,  $N$  is number of houses and  $e$  is precision level or degree of variability (0.5). A number of factors were reflected on it when selecting the study area.

This study presents data that was collected from the field. Data analysis was mainly descriptive using statistical techniques. SPSS was used to analyze household questionnaires. Qualitative data was transcribed into themes and content was analyzed using thematic approach. Results are presented in form of graphs and tables.

## RESULTS AND DISCUSSION

### Indicators of water service delivery

From the questionnaire survey, Blantyre Water Board

(BWB) produces about 86,000 m<sup>3</sup>/day of water against a demand of 96,000 m<sup>3</sup>/day with coverage of 75% through 37,650 meter connections. Water runs once in 2 days for 4 to 5hrs and billed residents pay is estimated at 2.7% of household income (US\$89). Non-revenue water (NRW) is estimated within 40 to 49% and complaints handling takes an average of 2 days. In the study area, over 50% of the residents walk 100 to 200m (Figure 2) and spend an average of 1 h to fetch water. Affordability of water bills are within standard i.e. households spend only 2.7% of their monthly income (US\$2.4) on water which is below standard water bill requirement (standard water bills should not exceed 3% of household income). Perhaps Blantyre Water Board needs to consultatively adjust tariffs upwards to cover operation and maintenance costs.

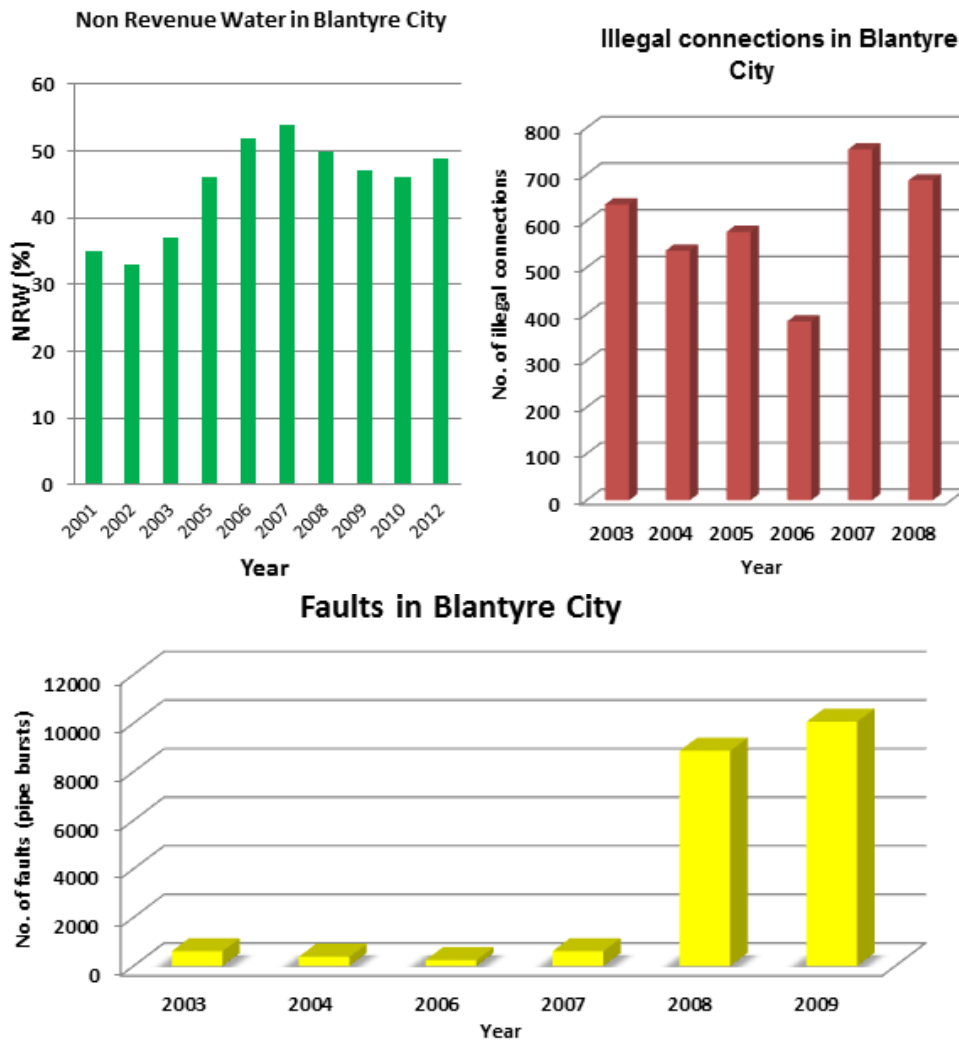


Figure 3. Factors obstructing water availability.

**Factors obstructing water availability**

The study established two levels of factors causing water unavailability in the city of Blantyre; namely internal (factors within the utility) and external (factors outside the utility). Within the utility, there is poor governance which is portrayed by, unavailability of performance reports and lack of incentives to workers (low salaries), low tariffs collection which is being aggravated by illegal connections rated at 7.3% and faults (pipe bursts/vandalism) which eventually has led to high non-revenue water (Figure 3a to c). Despite these factors, the study identified external factors that impinge water availability in the city as, rapid urbanization which was pegged at 8.2% while the production rate of BWB only caters a growth rate of 5.8%, electricity outages that impede water pumping at the intake, inadequate finance to refurbish the supply system

and political meddling. It is imperative that the government of Malawi should review the policies governing water supply and allow private partners to participate in urban water management so that they will infuse in resources to revamp and invigorate the supply system.

**Trends of tariff structure and cost recovery**

The trend of water tariffs in Blantyre has been too low to recover the cost of production and water supply. The study established that cost of water from the utility was US\$0.001 (MK 0.44) per 10 litres for public water point users which are below the gazetted flat rate of US\$ 0.001 (MK 0.59) in the Water Works Act Cap 72:01 of 2010. For which is a flat rate. For private pipe connection users the price was set at US\$1.06 (MK 446.00) and for both

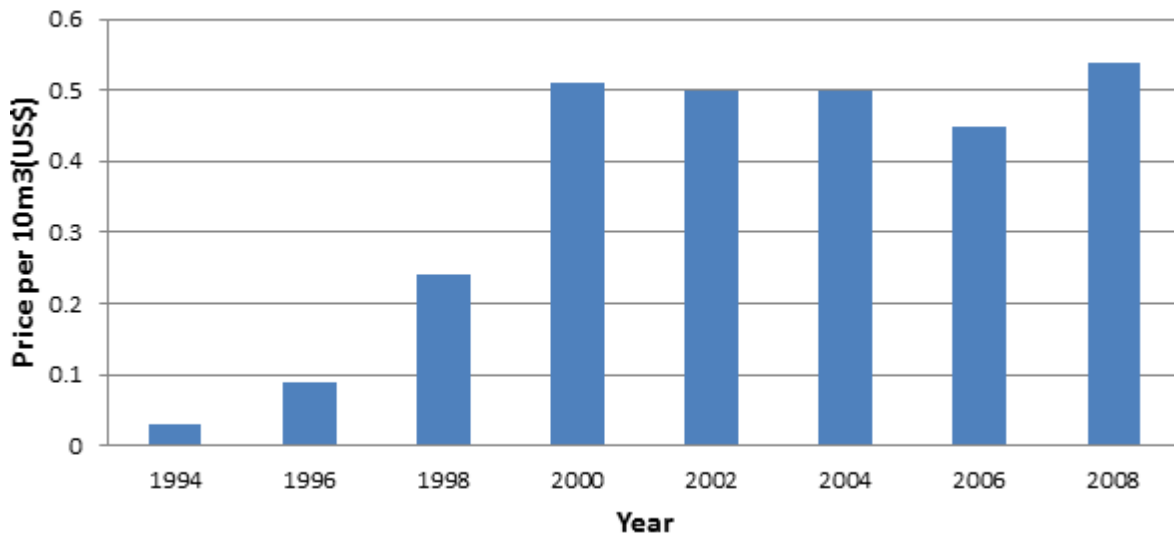


Figure 4. Trend of water tariffs in Blantyre in City.

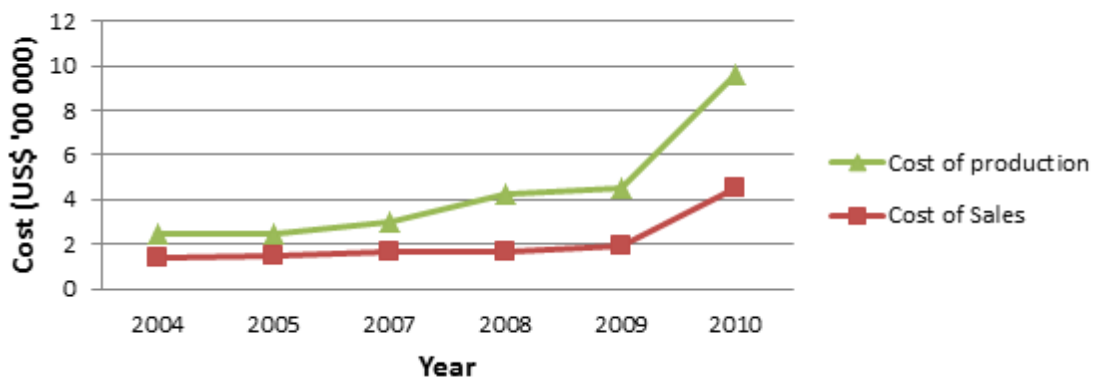


Figure 5. Comparison of operation and maintenance and revenue collected.

institution and commercial purposes the flat rate tariff is US\$2.50 (MK1 045.00) and industrial water use is priced at US\$4.76 (MK 1,999.00) for the first 10m<sup>3</sup> or part thereof for each user category. Figure 4 show the tariff trend from 1994 to 2008 (Note US\$1= MK 450).

From 1994 to 2010, Blantyre Water Board reported low tariff trends. Efforts to recover the cost in the utility were established to be low. This is evident from the fact that operation and maintenance costs between 2009 and 2010 far exceed the revenues collected over the period being reported (Figure 5).

It was also established that poor governance, low tariffs coupled with high urbanization estimated at 7.5% per annum, lack of financial support to the utility and lack of urban water and sanitation act were the factors obstructing water availability in Blantyre city. These have

caused prevalence of water borne disease like cholera where Blantyre registered 64 cases and 4 deaths in 2015 (United Nations International Children Education Fund (UNICEF), 2015) in the squatters of the city, and increased workload among women and slowed down both domestic and commercial business in the city. The study revealed that service quality is generally poor in the utility which is compounded by lack of incentives to staffs working in urban water supply.

### Conclusions

Poor governance, low tariffs coupled by urbanization beyond the infrastructures' carrying capacity, lack of financial support for maintenance and upgrading of the

reticulation system were the factors revealed by the study to have obstructed water availability. These have greatly contributed to drinking contaminated water in slums. The trend of tariffs has been staggering over the years to cushion operation costs of the utility and coupled with illegal connections, no sufficient system expansion and rundown infrastructure have led to low cost recovery. Bringing cost-effective technologies, infusing in funding for refurbishment of rundown infrastructure and introduction of sound charging regime and cost recovery processes were some of the strategies proposed to mitigate water inaccessibility in Blantyre city.

This study therefore recommends that the Government of Malawi should consider subsidizing urban water utilities to boost operations, privatize water services and operation and make water utilities autonomous to avoid political meddling.

### Conflicts of interest

The authors have not declared any conflict of interest.

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