



Piped Water Supply in Uganda: How can it be affordable for all?

OVERVIEW

A piped water supply system or scheme is an array of pipes joined together to transport portable water from a source to the consumer service point. The various components of a piped water scheme include the source (river, lake, spring, and production boreholes), transmission and distribution mains, reservoir tanks, Break Pressure Tanks (BPTs) where the pressure ratings are high, a water treatment plant, and the service points (taps).

When the source is at a higher altitude than the supply area, the water is transmitted by gravity without any power requirements. This type of system is referred to as a Gravity Flow Scheme (GFS). A combined system is where the water is transmitted by pumping and gravity flow. The sources of power include grid, solar, generator, and windmills.

Proper management, Operation and Maintenance (O&M) of a water system are key in ensuring functionality. Hence funds are required to meet expenses such as payment of operators' staff, power tariffs, fuels and replacement of broken down parts.

Water consumers cover the above costs through payment of water tariffs set by the water operators and approved by the Ministry of Water and Environment (MWE). This policy brief explores how piped water tariffs can be affordable for all Ugandans.

KEY ISSUES

- About 19.7% of Ugandans are poor (Poverty Status Report 2014) and unable to pay for piped water required for household use. Additionally, households earning a monthly income of less than Ug shs 500,000 and are connected to piped water supply struggle to pay their monthly water bills.
- The MWE central regulatory division that administers tariff control among other roles lacks independence.
- Piped water management has been taken up by some private sector operators who want to maximize profits and therefore do not take into consideration the inability to pay by some households.
- There is low application and awareness of the MWE pro-poor strategy especially at the District Local Governments.

Introduction

One of the strategic objectives of the MWE is to provide safe water within easy reach and hygienic sanitation facilities based on management responsibility and ownership by users to 79% of the population in rural areas and 95% in urban population by the year 2020, with 80%-90% effective use and functionality of the facilities.

In the Uganda Vision 2040, the government plans to improve the health, sanitation, hygiene, promote commercial and low consumption industrial setups, construct and extend piped water supply and sanitation systems to all parts of the country. Bulk water treatment and supply

systems that cover significant areas will be promoted. The extension of piped water supply system will take into consideration the urbanization strategy that government is promoting over the Vision period.

Uganda's plans for water supply are in line with the Sustainable Development Goal 6: *Ensure access to water and sanitation for all*, and the target: *To achieve universal and equitable access to safe and affordable drinking water for all by 2030*.

Uganda's household characteristics

According to the National Population and Housing Census (NPHC) 2014, Uganda's population is 34.6 million persons of which 77% live in the rural areas while 23% live in urban¹ areas. The number of persons increased by 10.4 million from the 2002 census. This means higher demand for services such as safe water supply. The average household size is five persons although the rural average household size was higher compared to urban areas.

Nearly 6.7 million persons (19.7%) are poor² and the incidence of poverty remains higher in rural areas (22.8%) than in urban areas (9.3%). More than half (54%) of rural households earned less than Ug shs 200,000 per month compared to 29% in urban areas (Table 1). Households in the Eastern and Northern regions dominated the lower income classes.

Table 1: Household income classes by residence in 2012/13 (Ug shs '000)

Income range	Urban (%)	Rural (%)	Uganda (%)
Up to 50	4.4	9.2	7.9
50-100	8.2	14.8	13.1
>100 - 200	16.7	30.4	26.8
>200-300	13.7	15.8	15.2
>300-500	19.2	14.3	15.6
>500-1000	21.0	10.2	13.1
1000+	16.9	5.3	8.4

Source: Uganda National Household Survey 2012/13

Financing piped water supply systems

Every Financial Year (FY) the MWE spends billions of shillings for the construction of piped water systems located in both rural and urban centers. Table 2 illustrates examples of piped systems with high contract sums that were constructed by the ministry between FY 2012/13 to FY 2015/16.

Table 2: Contract sums of a few selected schemes

Name of scheme	Location (District)	Contract Sum (Ug shs billions)
Nyarwodho GFS	Nebbi	25.72
Kanyampanga GFS	Kanungu	17.81
Bududa-Nabweya GFS	Bududa	15.84
Lirima GFS	Manafwa	14.99
Buwama-Kayabwe water supply	Mpigi	14.33
Mayuge Town Water Supply	Mayuge	9.75

Source: BMAU Budget Monitoring Reports

Water tariff

A water tariff is a price assigned to water supplied by a public utility through a piped network to its customers (Wikipedia).

The National Water and Sewerage Corporation (NWSC) is the biggest operator/manager of water and sanitation services in Uganda. By June 2015, the corporation was managing 110 towns countrywide. On 1st November 2015, the NWSC published a new tariff plan (Table 3) applicable across all the 110 towns. The tariff plan is differentiated for all consumer categories thus taking into consideration the pro-poor water strategy.

Table 3: NWSC Tariff in FY 2015/16

Consumer Category	Cost per cubic meter VAT excl. (Ug shs)	Remarks
Public Stand pipe	1,533	Applicable to individuals who strictly sell water to the public
Domestic	2,490	Applies to residential properties and blocks (homes)
Institution/ Government	3,065	Complements institutions like hospitals, schools and government establishments
Commercial <500m ³	3,760	For properties such as student hostels, supermarkets, arcades, malls, and also applicable in case of construction.
Commercial 500-1500m ³	3,760	“
Commercial >1500m ³	3,005	“
Weighted water tariff	2,668	

Source: NWSC

The NWSC manages cities, municipalities and towns whose populations are over 5000 persons.

Other water operators commonly known as Private Operators (POs) include private individuals and registered private companies such as Amazing Enterprises Ltd who are managing Kakumiro and Kyamulibwa water systems, Kagulu Multiple Services Ltd managing Namutumba Water Supply.

Local governments, in consultation with MWE, appoint and manage the POs for all piped water schemes that are outside the jurisdiction of NWSC.

The tariff set by the POs is supposed to meet the costs of repair and replacement of worn out parts; labour costs of Operation and Maintenance (O&M), costs of administration and logistics like stationery, as well as transport for the technicians. Hence the tariff may vary from one town to the other.

During the BMAU monitoring exercise between FY2013/14 and FY2015/16, the tariff charged by POs for the water systems of Zirobwe, Kyamulibwa and Kakumiro was Ug Shs 4,000 per cubic meter, which was higher than all the NWSC tariffs.

The community in Zirobwe complained that the tariff was high.

Affordability of the water tariff charge

The principle of affordability requires the state to ensure that the costs of water and sanitation services charged to the households are set within a reasonable proportion of their monthly disposable income in order to ensure access to safe water and sanitation and for other basic services protected by human rights law to remain financially accessible.

The MWE design guidelines for water supply infrastructure provides 2% of monthly household income as a target value for water supply expenses per month. Additionally the specific consumption for a yard tap ranges from 20-40 liters per person per day.

Therefore the minimum monthly water demand of an average household is equal to the minimum specific daily consumption per person multiplied by the average number of people in the household multiplied by the average number of days per month.

$$\begin{aligned}
 \text{Monthly household} &= 20 \text{ liters} \times 5 \text{ persons} \times 30.5 \\
 \text{demand for water} &= 3,050 \text{ liters per month} \\
 &= 3.050\text{m}^3 \text{ per month}
 \end{aligned}$$

¹ Cities, Municipalities, Town councils and Town Boards

² Poverty Status Report 2014, Uganda National Household Survey 2012/13

Household monthly spending on water

a) NWSC as operator

The monthly water charge based on the domestic tariff by NWSC would be Ug shs 7,594.5.

The cost including 18% VAT and Ug shs 1,500 service charge then totals Ug shs 10,461.51.

b) Private operator

Basing on the private operator fee of Ug shs 4,000 per cubic meter, the monthly cost estimate for the household would be Ug shs 12,200. The cost including 18% VAT and Ug shs 1,500 service charge would total Ug shs 15,896.

Hence, the minimum average monthly cost estimate for water for an average household ranges from Ug shs 10,461.51 to Ug shs 15,896 depending on operator.

From Table 1 and the MWE design consideration of 2% of household income set for monthly water cost, persons earning less than Ug shs 500,000 and are connected to the piped water supply struggle to pay their monthly water bills. Additionally the 19.7% poor Ugandans cannot afford a piped water connection.

Implications of unaffordability of piped water supply

Access to an improved water source is a prerequisite for improved health. According to the NPHC 2014 the distribution of main sources of drinking water by households were: Piped water (20.7%), Boreholes (33.5%), Protected springs/wells (16.6%), and unimproved sources e.g. lakes, rivers, streams, ponds (28.8%).

This implies that 28.8% (9.96 million Ugandans) are at risk of contracting water borne diseases such as typhoid, cholera, dysentery, polio among others which can lead to death.

Although the highest percentage of Ugandans (33.5%) use borehole water for drinking, if the

catchment area is not well protected, then boreholes become liable to contamination thereby rendering the water unsafe for consumption.

Additionally boreholes and other point water sources are designed to serve 100 to 300 households hence during peak hours, the time taken for water collection is prolonged which time could be used for other economic activities.

Women, girls and children being the main water collectors are at risk of rape, kidnap and defilement as a result of having to travel long distances to fetch water from other sources.

Conclusion

The government invests huge sums of money in the construction of piped water supply systems in rural and urban areas; however, only 20.7% of households use piped water. Households earning income below Ug shs 500,000 per month struggle to pay their water consumption per month, even with the NWSC tariff plan for the different consumer categories. Hence persons unable to access reliable piped water supply resort to other sources which may lead to diseases and other dangerous consequences.

Recommendations

1. The MWE should set up an independent regulation unit and also strengthen regulation of POs to reduce on the excessive water tariffs.
2. The MWE should enhance the pro-poor water strategy through awareness at DLGs and by rolling it out to all private operators.
3. The government should support investments in small and medium scale enterprises that can directly offer employment to the poor in order to increase income levels.

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