

39th WEDC International Conference, Kumasi, Ghana, 2016

**ENSURING AVAILABILITY AND SUSTAINABLE MANAGEMENT
OF WATER AND SANITATION FOR ALL**

**Finance for long-term sustainability of small towns piped
water services: the case of Ghana**

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BRIEFING PAPER 2514

Financing of small towns piped water services is critical to ensure the long term sustainability of the services provided. Tariff determination details have been outlined in the national guidelines for small towns water delivery. However, a study on a number of the systems in Ghana indicates strong emphasis on funds generation mainly through the sale of water without corresponding attention to efficient and effective management of the funds for long-term sustainability. Some small towns piped water services barely break even and struggle to reach their design life. There is then a sharp decline in service level due to their inability to expand/upgrade their capacity to meet growing demand for increasing populations. The authors have explored the evolution of post-project financing and have identified a serious gap in keeping a capital maintenance/replacement fund. Refocusing on efficient financial management and transparent governance systems for judicious utilisation of the funds is recommended.

Background

The post International Drinking Water Supply and Sanitation decade reforms saw developing countries including Ghana emphasising a shift from increasing access to potable water supply and sanitation services to providing services which are sustainable. To this end, a number of sustainability frameworks were developed and tried on different WASH projects in different countries. The one proposed by the WASH Sustainability Charter (2012), includes: “*strategy and planning, governance and accountability, service delivery support, financial management, and reporting/knowledge sharing*”. Prior to this, there have been other frameworks which involved a blend of **technical, institutional, social, economic, environmental and financial factors** to achieve service sustainability.

The Global e-conference on small towns organised by the World Bank in March 2000 proposed a sustainability framework for small towns piped water services anchored on three important pillars: “**the need for formal management arrangements, a legal basis for ownership and management**, and most importantly, **the ability to expand services to meet growing demand for water**” (World Bank, 2003:1). Sustainability initiatives undertaken by different countries in the past two decades have achieved varying degrees of success. There have been some significant shortfalls, bottlenecks and challenges, which if addressed will enhance the prospects for sustainable piped water service delivery. A careful analysis of the range of factors/issues, define the pathway to sustainability so as to identify the high-impact factors for priority attention and investment.

This paper therefore draws attention to ‘*finance and governance*’ as the most critical dual sustainability challenges, which have come up in contemporary times.

Evolution of finance for piped water services sustainability

Susan McAdams, a World Bank Senior Advisor on Financing for Development defined finance as “both a noun and a verb, which are equally important in development financing”. According to her, “finance as a noun is ‘**the whole discipline of managing money**’ (**financial management**) whilst finance as a verb refers to ‘**the act of providing money**’ (**i.e. money flowing**)” (World Bank MOOC on Financing for Development, Nov-Dec., 2015). She recommends equal consideration for the two aspects of finance.

Ghana's experiences, however, show a disproportionate emphasis on finance as a verb in the small towns piped water services sector. Water supply projects/programmes have engaged communities through animation to appreciate the economic value of water and accept to pay user fees. In some cases, unpleasant experiences of crisis breakdowns forced some communities to accept the need to pay for water. It took time before sustainable water tariff mechanisms became more widely accepted to the point where it has now become the norm in Ghana's rural and small towns water sector.

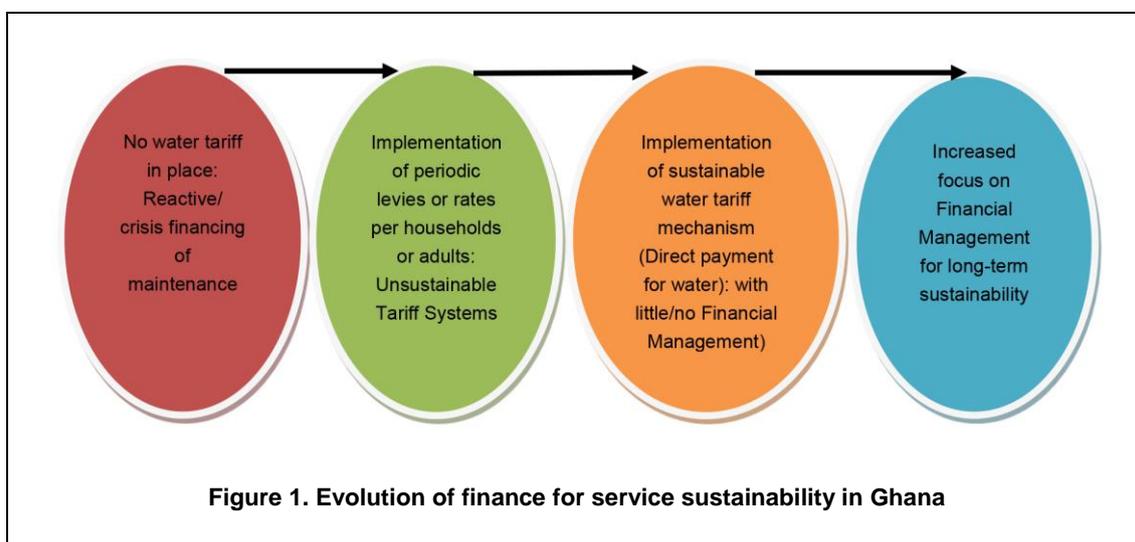


Figure 1 illustrates the progress made over the years in developing and introducing O&M cost recovery systems for small towns piped water services. What is needed now is the development and operationalisation of adequate systems and policies for effective management and utilisation of these monies. This explains why most of these small towns have been unable to finance the continuous provision of adequate services through the financing of major repairs, extensions, rehabilitation, expansion and outright replacement of the infrastructure.

The role of Development Partners and Private Investors including the Banks and Insurance Companies and Government in piped water services sustainability finance for small towns is yet to be clarified and tapped fully.

Existence of operation and maintenance management costs/budgets

The operation and maintenance cost of small towns piped water services is often found in the feasibility and design reports for water systems. This is not fully utilised by the managers of the water service. It is also not systematically monitored and reported on during the operation and maintenance (O&M) phase of the water supply project. The community level management teams known in Ghana as Water and Sanitation Management Teams (WSMTs) are given training in the preparation of O&M budgets for tariff setting. The practical implementation of this training is sometimes challenging especially when the required capacity is not available among the membership of the WSMT. Most small towns have therefore been paying water tariffs which are arbitrarily determined.

An assessment conducted by CWSA of the Water and Sanitation Management Teams (WSMTs) of 13 small towns under the IDA-GoG Sustainable Rural Water and Sanitation Project in the Northern Region of Ghana (CWSA, 2013) revealed that people were buying water directly at the public standpipes. However, none of the WSMTs had a budget for operation and maintenance management. This is why none of the 13 small towns assessed had Capital/Replacement Account to meet the life cycle cost of the water services leading to continuous deterioration of the piped water services to the inhabitants of these small towns. A review of sustainability of small towns piped water services in Ghana by Nedjoh (2014) using four small towns in the Central Region as case study noted the absence of O&M costs or budgets.

Policy considerations for capital reserve fund under community-managed piped water services

The Community Water and Sanitation Agency (CWSA) of Ghana recommend that WSMTs of small towns open and operate three Accounts namely: Operational or Recurrent Account, Capital/Replacement/Reserve Account and a Sanitation Account. 70% of the Net Revenues are for the Operational/Recurrent Account, 20% goes to the Capital or Replacement Account and 10% goes to the Sanitation Account.

The reality, however, has been that the communities sometimes operate only the Operational Account whilst the other two are either not opened or become dormant and subsequently collapse as noted in the dissertation research of Nedjoh (2014). The communities indicated that they do not raise enough revenues to enable them maintain the three separate accounts. The revenues generated for the O&M of the piped water services is usually used for recurrent expenditure without any provision for capital maintenance/replacement to sustain current demand or meet growing demand.

Policy considerations for capital reserve fund under management contract

Guideline values of 70% for the Private Operator and 30% for the Community (WSMT) are often used by the CWSA and MMDAs under the Private Operator Management Option for small towns piped water services in Ghana. This revenue sharing ratio is used to facilitate Management Contracts for small towns piped water services. The basis for the ratio in sharing the revenue is however unclear. The idea was to kick-start the process of private participation in small towns piped water services management with the hope of subsequently building the needed data for more scientific basis.

Under Management Contract, the responsibility for capital maintenance/replacement remains unclear. The dissertation research by Acheampong (2009) on the review of the Public-Private Partnership (PPP) model of the Bekwai Small Towns Water Supply System in Ghana *noted the lack of clarity on the responsibilities for major maintenance between the Private Operator and the community/WSMT as a weakness* stating that there was a problem of where to draw the line between maintenance and rehabilitation to be able to know the responsibilities of the Private Operator and the Water and Sanitation Management Team.

Reflection on the proportion of revenue allocated to Capital/Replacement Account in Ghana

In comparing the operational costs/overheads to future capital requirements for piped water services sustainability in small towns, one can conclude that assigning greater proportion of revenues to operational costs relative to future capital maintenance and upgrading expenditure is a contradiction. Small towns piped water services have significantly lower operational costs/overheads relative to urban water utilities. The exact definition of what capital maintenance, replacement and expansion consists of in small towns poses a challenge. In the very successful small towns, various activities including drilling additional boreholes and purchasing new pumps and electromechanical systems have been procured from operational accounts. Some have also extended pipelines to newly developing areas. These initiatives have led to additional revenue to make the systems more viable. Other towns have insisted these activities are capital expenditure and have therefore not undertaken such interventions.

A clear definition of capital maintenance or replacement expenditure will constitute a significant if not greater proportion of the life-cycle cost of the service. The definitions will require streamlining to ensure that basic replacement and expansion are well categorised. The existing revenue sharing ratios under the community-managed piped water services and those managed by Private Operators may also require redefining depending on the activities that make up the capital and replacement expenditure. Table 1 illustrates the percentage of the total Life Cycle O&M Cost which constitutes capital expenditure for long-term sustainability in respect of three small towns. It was arrived at through a participatory process during a training session on management of operation and maintenance for WSMTs of the three small towns.

Table 1. Capital expenditure as a proportion of total operation and maintenance cost			
Small towns	Total monthly O&M cost (GH¢) (January, 2016)	Provision for major repairs, extension, rehabilitation, expansion and even replacement (GH¢) (January, 2016)	% of the total which constitutes future capital expenditure
Zabzugu	24,973.80 (US\$6,554.80)	13,158.00 (US\$3,453.54)	53%
Bimbilla	28,693.06 (US\$7,530.99)	14,900.00 (US\$3,910.76)	52%
Wullensi	19,304.80 (US\$5,066.88)	8,575.00 (US\$2,250.66)	44%

Source: CWSA, 2016 Management of Operation and Maintenance Training Report

Judging from Table 1, small towns should be saving between 44% and 53% of their revenues in the Capital/Replacement Account every month to be in good standing. These percentages for future capital maintenance/replacement expenditure would have been higher at around 60% but for the current energy challenges such as unreliable power supply and rising energy costs facing most developing countries including Ghana.

Revenues which will accrue to the Private Operator under a Management Contract should be informed by a detailed and comprehensive Life-cycle O&M Cost estimates, allowing a Management Fee of about 10% to 15% as profit (based on the authors' experience) since all other operation and maintenance costs will be covered by the budget. The 10% to 15% management fee or profit is considered attractive enough to encourage private participation in the management of small towns water services.

Is anyone paying for capital maintenance/replacement expenditure?

The populations of small towns have been paying for capital maintenance/replacement expenditure albeit unconsciously. A number of O&M cost estimation and water tariff setting exercises undertaken by the Authors revealed that the water tariffs did not change even after making adequate provision for capital maintenance/replacement expenditure. In other words, populations of small towns should have been paying far less (by about 40 to 60% less) in water tariffs if capital maintenance/replacement expenditure had not been factored into the O&M budgets.

This situation could be attributed to the fact that the sector has not been very conscious of the full service delivery cycle for water supply but was somehow content with the minor O&M initiatives with the hope that they will translate into sustainability. The five-stage water supply service delivery cycle developed by IRC and AGUA Consult provides the clearest roadmap yet, for real sustainability of small towns piped water services (*Planning: design and tender; Implementation: construction; Operation and Maintenance: O&M; Major Maintenance and Repair; and Rehabilitation, Extension, and Expansion*) (IRC and Agua Consult, 2011:3). The portion of water tariffs which should go into Capital/Replacement/Expansion Account is likely being misapplied.

Are water tariff levels adequate to support long-term sustainability financing?

Water tariff levels in small towns have been more than adequate to support the sustainability objective of piped water services. The fact that water tariffs paid for piped water supply are higher in small towns than settlements covered by the Urban Water Utility in Ghana known as Ghana Water Company Limited (GWCL) has been common knowledge. Table 2 compares the water tariffs in the four small towns in the Central Region of Ghana and the Public Utilities Regulatory Commission (PURC) approved rates for GWCL.

Small town	Water tariff/m ³ Small towns (2013) (April 2013 exchange rate used: GH¢1.96 to US\$1)	Water tariff/m ³ The Urban Water Utility (GWCL) (1 st Qtr. 2014) – Gazette No. 14 March 2014 exchange rate used: GH¢2.6 to US\$1)	Percentage difference %
Assin Akropong	GH¢3/m ³ (US\$1.5/m ³)	GH¢1.47/m ³ (US\$0.57/m ³)	104%
Assin Bereku	GH¢2.5/m ³ (US\$1.28/m ³)	GH¢1.47/m ³ (US\$0.57/m ³)	70%
Twifo Mampong	GH¢5/m ³ (US\$2.55/m ³)	GH¢1.47/m ³ (US\$0.57/m ³)	240%
Aburansa	GH¢5.27/m ³ (US\$2.69/m ³)	GH¢1.47/m ³ (US\$0.57/m ³)	259%

Source: Nedjoh (2014) and Ghana's PURC Publication of Water Tariffs, Gazette No. 14 (February, 2014)

It is clear from Table 2 that small towns are paying high enough water tariffs to be able to generate the needed funds for capital maintenance/replacement expenditure. The situation is worse in small towns which do not have access to adequate drinking water supply and have to depend on private water vendors who use donkey carts and tricycles (Motor King) for their business. The water tariffs imposed by these private water vendors obtained during the assessment conducted in 2013 by the CWSA under the IDA-GOG funded Sustainable Rural Water and Sanitation Project in the Northern Region of Ghana 2013 were: Salaga: GH¢7.5/m³; Bimbilla: GH¢7.5/m³; Zabzugu: GH¢15/m³; Saboba: GH¢10/m³; Chereponi: GH¢7.5/m³; Gushegu: GH¢10/m³; Gambaga: GH¢15/m³; Nalerigu: GH¢10/m³; and Walewale: GH¢15/m³ (CWSA 2013, Assessment of 13 Water and Sanitation Management Teams in the Northern Region of Ghana, 2013:35).

Management options for small towns piped water services and sustainability

A comparative analysis of Community Management Option for small towns piped water services in Ghana and Private Operator Management Option in Uganda revealed that there is essentially no difference between the two management models with respect to long-term service sustainability (see Table 3).

Characteristics/feature	Ghana	Uganda
Budgeting for major repairs, replacements, rehabilitations, extensions, and expansion	Budgeting not done in some cases	O&M costs estimated but do not include capital expenditure. Covers only routine O&M costs. Rehabilitations and extensions are the responsibility of the public/government
Revenue Collection Efficiencies	Low	High (90%)
Sustainability	Demonstrable ability to provide services throughout the design life of the water system.	Demonstrable ability to provide services throughout the design life of the water system.
Service reliability	Cannot be guaranteed in times of capital expenditure financing resulting in long downtimes.	Cannot be guaranteed in times of capital expenditure financing resulting in long downtimes.

Scope of finance for small towns piped water services sustainability

For purposes of more holistic financial management by small towns piped water services, the Authors recommend an expanded scope of financing for service sustainability. This will involve: the adoption of a sustainable water tariff mechanism, the participatory preparation of a detailed/comprehensive O&M budget using the life cycle cost approach, setting realistic water tariff based on the life cycle cost of the service,

implementing the budget to the letter, managing the capital maintenance/expenditure funds efficiently by investing it in long-term financial instruments throughout the design life of the piped water system and beyond, and adopting/adhering to transparent and accountable governance system. The systematic monitoring of key financial performance indicators particularly Revenue Collection Efficiency and the Operating Cost Coverage Ratio are absolutely critical.

This holistic perspective of small towns piped water services financing will create the resilient financial capacity required for major repairs, extension, expansion, and outright replacement when needed.

Implications of weak finance/sustainability on service levels

The following conclusions of IRC and AGUA Consult (2004) as well as Caplan and Harvey (2010) aptly summarised the implications of weak finance/sustainability on service levels:

- IRC and AGUA Consult (2004) observed that “*in comparing theory versus reality, many inhabitants of small towns access a service that is at best **sub-standard***”.
- Caplan and Harvey (2010) also observed that “*without an effective sustainability profile of water supply services, small towns will continue to experience negative changes in their service levels since the water supply systems may not be rehabilitated, upgraded or expanded to meet the growing demand from an increasing population*”.

Key lessons/recommendations

The following lessons from Ghana will help in repositioning small towns piped water services for sustainability:

1. Empowerment through the establishment of management structures, training, and adoption of different management options, opening and operation of Bank Accounts, Monitoring and Evaluation etc. are good but not sufficient unless accompanied by careful development of transparent and accountable governance systems and procedures as well as professional management of capital maintenance/replacement funds.
2. Isolating and paying attention to finance is most fundamental to achieving long-term piped water services sustainability. A focus on financial management for long-term sustainability is deemed critical.
3. Small towns populations have been paying for capital maintenance/replacement already. What is needed is the conscious designation and efficient management of the capital maintenance/replacement funds by reliable Fund Managers with a good track record.
4. Ignoring the need to prepare for capital maintenance/replacement during the design life of the water systems is a recipe for deteriorating service levels over time and the eventual collapse of the piped water services with dire consequences for large populations especially women and children.
5. Deteriorated service levels impact even more negatively on institutions such as Schools (with boarding facilities) and Medical Facilities.
6. Sub-standard piped water services in small towns result in high cost of water for especially for poor households as they resort to patronising the services of private water vendors, whose water tariffs are usually high and unregulated.

Conclusion

The paper highlighted the key role of finance especially for capital maintenance or replacement in sustainable piped water service delivery for small towns in Ghana and makes a case for re-focusing of efforts and resources on developing robust financial management and governance systems for long-term service sustainability.

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