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ENSURING AVAILABILITY AND SUSTAINABLE MANAGEMENT
OF WATER AND SANITATION FOR ALL

Benchmarking sustainability of small towns piped drinking water services

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BRIEFING PAPER 2491

Benchmarking sustainability for small towns piped water services is needed due to the persistent and worsening challenges affecting the quality, level and reliability of small-towns piped water services in spite of the implementation of numerous policies, plans, and initiatives for sustainability. The growing demand from rapidly increasing populations for reliable services provides further justification. Strict sustainability benchmarks will help operators of small towns piped water services to consistently evaluate their performance against these benchmarks and take pragmatic actions for improvement. It will also help national governments and agencies responsible for small towns in their monitoring, evaluation, harmonisation and coordination activities and provide objective basis for comparability and documentation of best practices. An important benchmark like the operating cost coverage ratio of piped water services will provide strong indication of sustainability as it demonstrates the capacity of the services to replace themselves and even invest in new infrastructure for expanding populations.

Background

The concept of sustainability has characterised water supply projects and programmes in Africa since the 1990s as part of the post-decade (International Drinking Water Supply and Sanitation Decade: 1981 to 1990) reforms. There have been a wide range of efforts and strategies including the adoption of decentralised approach, community participation as well as community ownership and management, private operator management of small towns water supply services, the adoption and implementation of water tariffs, awareness creation and capacity building of stakeholders and actors and the push for effective governance and institutional strengthening.

However, these efforts and strategies have usually not been customised to meet the respective needs of small towns and rural communities. Small towns have usually found themselves mixed up with rural communities in the planning, implementation and monitoring and evaluation of water supply services. This is in spite of the fact that the risk to small towns piped drinking water services from poor or weak sustainability is huge with severe consequences for larger populations particularly women and children. Ensuring the sustainability of small towns is significant because of their high investment costs, high O&M costs, high cost of replacements and rehabilitations and high expansion and extension costs. It is important to isolate and emphasise the sustainability of small towns piped water services in order to protect the integrity of these investments and maintain the significant coverage levels they account for.

The World Bank has been a global leader; helping through global stakeholder participatory efforts usually by means of e-conferences and technical field notes of experts to define clear delineations for small towns and their unique characteristics and needs.

Suffice it to say that the sustainability challenges of small towns piped drinking water services have been persistent and daunting over the years especially in Sub-Saharan Africa.

Whilst there are various definitions for sustainability of rural and small towns water supply as well as the development of various sustainability frameworks, benchmarking sustainability remains a gap and thus constitutes the focus of this paper.

The paper draws on the research work of Nedjoh (2014), which was based on the case study methodology, along with a combination of research techniques mainly focus group discussions, key informant interviews, review of documents and archival records, and observation.

Definition of key concepts

The two main concepts, which provide the context for this paper are benchmarking, and sustainability.

Benchmarking

In a supplemental lesson on the worldwide web by Wren Hawthorne, "Benchmarking was defined as the practice of a business comparing key metrics of their operations to other similar companies" (Hawthorne n.d). "Benchmark report can examine things like revenue, expenses, production amounts, employee productivity, etc." (ibid). It was further noted that "companies use benchmarking to become more competitive since by looking at how other companies are doing, they can identify areas where they are underperforming and take necessary measures to improve" (ibid). Best practices; peer benchmarking; SWOT analysis; and collaborative benchmarking were identified as types of benchmarking (ibid).

Briefly put, a benchmark is a standard or point of reference by which performance could be measured. The question therefore is, at what point can a small town piped drinking water service be described as sustainable or unsustainable?

Sustainability defined

The World Health Organisation defined a service as "sustainable when: it functions and it is being used; it is able to deliver an appropriate level of benefits (quality, quantity, convenience, continuity, affordability, efficiency, equity, reliability and health); it continues over a prolonged period of time (which goes beyond the life cycle of the equipment); its management is institutionalised (community management, gender perspective, partnership with local authorities, and involvement of formal and informal private sector); its operation, maintenance, administrative, and replacement costs are covered at local level (through user fees, or alternative financial mechanisms); it can be operated and maintained at local level with limited but feasible external support (technical assistance, training and monitoring); and when it does not affect the environment negatively" (WHO, 2000:41).

The above definition underscores the importance of time in sustainability. What is not known, however, is 'how long' a water facility should deliver adequate and reliable services to be deemed sustainable?

The definition provided by WHO (2000: 41) attempted to clarify the time concept of sustainability by referring to "continuous performance or functionality of the service beyond the life cycle of the equipment". The particular equipment being referred to here is however not clear.

There is therefore the need for policy makers, researchers, managers and practitioners in the small towns water supply sub-sector to engage in a process of refining the time concept of sustainability for small towns piped water services in view of the fact that it is fundamental for benchmarking.

Various definitions made mention of "the service producing benefits for a long or prolonged period of time" without any specific time line whilst others use the design life of the water systems (10 years in the case of Ghana) as reference point for measuring or assessing sustainability. For instance, the Community Water and Sanitation Agency (CWSA) in Ghana "considers a small town water system sustainable if it provides reliable and good quality water in sufficient quantity over the design period of the system" (10 years in the case of Ghana) (CWSA, 2005:11).

Clearly, the time horizon for the design of potable water supply infrastructure could not be the same as that of its sustainability. Operation and maintenance measures are expected to continue supporting the provision of the service beyond its design life and adapt to meet increasing demands. The time concept is important because the operation and maintenance (O&M) requirements, including tariffs and funds utilisation/management will be different if a drinking-water supply service is only expected to work for the duration of the design life as against the goal of providing benefits to the population beyond the design life.

It is becoming clear increasingly that the real test for sustainability occurs after the design life of the piped water service has elapsed. Typically, the piped water supply system is supposed to work optimally during its design life (i.e. if designed properly) save some minor and routine maintenance requirements. Operation and maintenance management of the water system during its design life could therefore be used to prepare sufficiently towards making the service sustainable in the long term i.e. throughout its working life, which goes way beyond the design life.

This preparedness could be measured in terms of how much savings the management team of the piped water service is able to accumulate over time or how much investments have been entered into over the years purposely for future major repairs, replacements, rehabilitation, and system extensions/expansion.

Key findings from the research

This section draws on the findings from the dissertation research conducted by the Author into the sustainability of four small towns piped water services in the Central region of Ghana namely: Assin Akropong, Assin Bereku, Twifo Mampong and Aburansa (see Nedjoh, 2014).

Overall, the sustainability of small towns piped water services in Ghana is a matter of concern for various reasons. The challenges of the community management model, lack of oversight and technical support for community management structures, low prioritisation of small towns/rural water, sanitation and hygiene (WASH) by the Metropolitan, Municipal and District Assemblies (MMDAs) resulting in weak District Water and Sanitation Teams (DWSTs) and their inability to undertake community outreach, inadequate governance and accountability systems, vulnerability of community-level Water and Sanitation Management Teams (WSMTs) to dissolutions and pressures for money otherwise meant for major O&M activities, as well as inadequate service levels due to increased demand arising from rapidly growing population account for the poor sustainability status of the small towns piped water services in Ghana. In Ghana, CWSA is the national Agency for WASH in rural communities and small towns. It adopts a decentralised approach to planning and implementation of the National Community Water and Sanitation Programme (NCWSP) by working through the Local Government Authorities especially the DWSTs which are the WASH Departments in the MMDAs. The WSMTs are the community-level management structure for drinking water supply and sanitation, which reflects the predominant Community Management Model.

Similar to findings from other studies (see for example Sansom, 2004:1.9, 5.3 and 5.4) the research identified that non-use of water meters makes it difficult if not impossible to estimate and monitor non-revenue water (NRW) in order to introduce appropriate and timely measures to prevent further loss of revenue and reduce water wastage. The weak financial status of the WSMTs means that they will not be able to resolve any major breakdown, which may occur.

There have been misapplication of funds as some community leaders and Assembly members/Unit Committees are using the WSMTs as their most reliable source of funding for community development projects.

House connection owners have been unwilling to pay their water bills resulting in huge accumulated debts since these customers continue to receive services thus hurting the financial health of the water services. The water supply infrastructure in the four towns shows visible signs of inadequacy, old age and weakness. They experience frequent breakdowns. The iron removal plants installed on three of the four water systems have broken down. The bulk meters installed in three of the four small towns were not working and taps in some of the communities were not functioning well. Severe erosion has affected some concrete structures such as the standpost platforms. There were major cracks on some drains also whilst soakway pits were not functioning well.

There was reduced capacity of the water supply services relative to demand.

Out of the four small towns studied, only one has a functioning office for its WSMT. Unreliable power supply, rising cost of electricity, and power fluctuations have been another set of problems affecting the operation of the small towns water services. Furthermore, water quality monitoring was not carried out by the WSMTs mainly because of low awareness about its necessity. There was also inadequate information available to the WSMTs on water quality monitoring.

The legal mandate of CWSA, which made it a facilitator with the assumption that MMDAs will be effective in supporting the planning, financing, and implementation of rural WASH as well as supporting community management through monitoring and provision of technical assistance was identified as a serious weakness.

On a more positive note, however, all four communities have effective demand for potable water supply. The WSMTs have been committed to making sure that the services were running for the population to have access to water. Even with inadequate institutional support from the MMDAs, the WSMTs have been positive and enthusiastic about their work, linking up quite well with the private sector for specific maintenance and supply services. Some measure of regulation is however, needed in areas of service charges, pricing, quality of work, and warranties from the private firms.

All four research communities have kept their water systems functioning throughout the design life of 10 years and even beyond. The WSMTs of Assin Bereku, Aburansa, and Twifo Mampong have actually have been managing their systems for 16years, 18 years and 21 years respectively albeit severe challenges, declining service levels and growing demand.

Key frameworks or building blocks of sustainability

The World Bank outlined three key easy-to-implement requirements for sustainability of small towns piped drinking water services, which could be used as framework for planning, policy formulation, management, and monitoring and evaluation of small towns water services. These are: formal management arrangements; legal basis for ownership and management; and the ability to expand services to meet the growing demand for water (World Bank, 2003:1). The extent to which, these requirements are met by national governments and relevant agencies will determine the prospects for sustainability of small towns piped water services.

The case study into four small towns piped water services in the Central Region of Ghana revealed that the services did not have the capacity to undertake major repairs and replacements let alone expand the services to meet the growing demand, having been running their water services over periods ranging from 5 to 21 years (Twifo Mampong water system: constructed in 1993 - 21 years; Aburansa water system serving six other communities: constructed in 1997 – 18 years; Assin Bereku water system: constructed in 1998 – 16 years; and Assin Akropong water system: constructed in 2010 -5 years) (Nedjoh, 2014:57-60).

The need for extension and expansion of these systems was evident as they were characterised by old age and experience frequent breakdowns putting pressure on the limited financial resources (ibid). It was also clear that these small towns piped water services have not planned for, and saved towards service extension and expansion in order to sustain service adequacy and reliability whilst the anticipated support from central and local government for major rehabilitations have not been forthcoming (Nedjoh, 2014:88). The community-based Water and Sanitation Management Teams (WSMTs) which were in good standing resort to the Banks for small loans to undertake limited extensions (ibid).

The WASH Sustainability Charter, “an international collaborative effort, which seeks to align WASH stakeholders around collaboratively developed sustainability principles and catalogue adoption of these principles around the world recommends five key principles for sustainability”, namely: “strategy and planning, governance and accountability, service delivery support, financial management, and reporting and knowledge sharing” (WASH Sustainability Charter, 2012:1-2). These principles could also be used as a framework for evaluating the success or otherwise of service sustainability.

The problem, however, has been the inability or unwillingness of national governments and relevant water agencies as well as local governments to consciously subject themselves to evaluations within these sustainability frameworks, which will enable them to know how well the small towns piped water services are doing and what urgent remedial measures need to be taken. The consequence of this has been the provision of sub-standard services in terms of quality and service levels to the populations (see IRC & Agua Consult, 2011:24) and the increasing risk of total collapse of some piped water services. The situation of the Central Region of Ghana, which had 51 piped water systems out of which 4 had collapsed leaving 47 by the time of the research in July, 2014 attests to this (Nedjoh, 2014:40).

Challenges affecting the sustainability of small towns piped water services

Unclear leadership and responsibility for small towns piped water services and the weaknesses of the community management approach have been identified as two major challenges affecting small towns piped drinking water service sustainability.

Application of community ownership and management concept to small towns piped water services

The concept of Community Ownership and Management may not be appropriate for small towns water services. The evidence obtained by the research shows that the ‘gate-keeping’ role expected from communities is being seriously undermined and compromised by the increasing interest of traditional leaders and local politicians in the funds for other community development purposes. This is a potential threat to sustainability. The leaders obviously do not appreciate the scale of investment needed for future major replacements, rehabilitation, extension and expansion of their piped water services, hence the tendency of some of them to replace traditional sources of fund raising such as the imposition of

development levies for other community projects/events with funds from the WSMT, which is seen as more convenient and predictable.

Also, the relatively large size of small towns does not promote community cohesion and participation especially in actions, which will hold the service providers/managers accountable for their stewardship.

Existing knowledge from various authors on the subject of community management demonstrate a profound degree of convergence as illustrated below:

Colin (1999 cited by Shaw, 2012:16) found that in many projects, the community management model was built on the premise that it would succeed, without necessarily investigating the risks and constraints associated with it.

According to Harvey and Reed (2004:50), the community management model remains by far the most widespread for rural water supply in Sub-Saharan Africa, and yet has failed to deliver the levels of sustainability that were initially anticipated.

Harvey and Reed (2004:50 citing Ockelford, 2002) further observed that government authorities and support agencies do not fully understand the need for appropriate support systems probably because the development of the Village Level Operation and Maintenance (VLOM) concept might have created complacency.

Lane (2004:21) noted that communities cannot manage their water and sanitation services in a vacuum; rather they need long-term technical and professional support from intermediary organisations, which in the case of Ghana will be the CWSA and the MMDAs.

Proposed sustainability benchmarks for small towns piped water services

The most important outcome or higher level result of all sustainability measures for small towns piped water services is their ability to provide adequate and uninterrupted services. This includes the capacity to expand and extend the service to meet growing demands from increasing population.

All other indicators such as level of O&M cost recovery, revenue collection efficiency, non-revenue water (NRW), operating cost coverage ratios, number of hours of service provision per day, and down time contribute to the expected sustainability outcome of continuous access to safe, adequate and reliable water supply for the population.

The operating cost coverage ratio, which is 'the total annual operational revenues/total annual operating costs' represents a critical sustainability benchmark for small towns piped water services (see Sansom, 2004:1.9). "This ratio is expected to be >2 to enable investment in replacing old infrastructure and providing new infrastructure for an expanding population" (ibid).

Generating/mobilising revenue for O&M through adequate water tariffs, improved revenue collection efficiencies and reduced Non-Revenue Water (NRW) are as important as protecting the funds so generated from misuse, corruption and misapplication since the need for these funds is in the future and therefore not immediately evident (Nedjoh, 2014:64&90).

The World Bank could again play its global leadership role in collaboration with the WASH Sustainability Charter to develop and refine sharp sustainability benchmarks for small towns piped water services and mobilise international support for their adoption and use.

Key lessons learnt

Implementing sustainability measures or activities do not necessarily result in sustainability as seen in the findings from the research, which catalogued many challenges, gaps and problems in spite of the many training programmes and other sustainability measures implemented as part of WASH projects and programmes.

The extent to which best practices are imbibed by managers, communities and intermediary agencies within a broader framework of governance, planning, M&E and reporting, capacity building and professionalism against clearly established benchmarks determines the level of sustainability of small towns piped water services.

Quite a lot have been happening in the small towns piped water services sector with the aim of achieving sustainability but there are still challenges, which hinder success.

Implementation of sustainability measures like the institution of service management arrangements, capacity building, adoption and implementation of water tariffs, upward reviews of water tariffs, and the payment of water tariffs among others will not necessarily result in sustainability of small towns piped water services without clearly established sustainability benchmarks and conscious performance monitoring and

evaluations against the benchmarks at regular intervals coupled with targeted and systematic follow-up actions for improvement.

Conclusion

It could be said that benchmarking sustainability of small towns piped water services is important and should be linked with the promotion of institutional clarity and responsibility for a more systematic performance monitoring and evaluation against the benchmarks.

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