Tracking direct support and capital maintenance cost in rural water service delivery in Ghana

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Abstract

Sustaining rural water service levels requires institutionalised efforts to support local level service providers, users or user groups (direct support) and recurrent expenditure on operational and capital maintenance expenditure on water systems when needed. The rural water sector in Ghana is challenged with inadequate expenditure on direct support (ExpDS) and capital maintenance (CapManEx) with resultant high rates of non-functional and non-reliable water facilities resulting in low water services received by users. This paper tracks the direct support and capital maintenance cost of rural water services and compares the levels of the actual with the realistic or ideal cost for sustainable service delivery. The study is based on analysis of data on actual expenditure of water systems generated by the WASHCost study in Ghana and the use of planning and budgeting exercises to generate the realistic ExpDS conducted as part of decentralised level life-cycle cost approach (LCCA) training. The study shows that both the direct support cost and capital maintenance expenditure in Ghana are far lower than the international benchmarks for sustainable water service delivery. The actual direct support cost measured and ideal direct support cost obtained from the WASHCost study are less than international benchmarks, about 20% - 40% of international WASHCost benchmarks. The CapManEx for water point systems are also less than the benchmarks by 13% - 33%. Monitoring rural WASH service delivery in the areas of the life-cycle costs and service levels are important for strengthening planning, budgeting, and delivery of sustainable services for all. The study argues for the inclusion of life-cycle costs and service levels in WASH sector monitoring framework.

Keywords

Capital maintenance, cost magnitude, direct support, rural water service.

Introduction

Ghana's rural water coverage has been increasing steadily but there are concerns with high levels of non-functional water systems and the levels of water service that users receive (Nyarko et al, 2012). The rural water coverage has increased steadily from 36% (1990) to 80% (2010) according to the UNICEF/WHO Joint Monitoring Programme (UNICEF/WHO-JMP, 2012). Currently, the rate of non-functional systems is estimated to be about 30% in rural water sector in Ghana (Nyarko et al., 2012). Water service levels measured in three districts by WASHCost revealed that only 33% of inhabitants in rural

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areas are receiving the basic level of service (ibid). Thus, even though increased coverage means that a lot of rural communities have been provided with water facilities, the reality of high levels of non-functionality, including high frequency and long duration of breakdowns, means that water users experience poor and unreliable services. The national agency responsible for facilitating rural water service delivery, Community Water and Sanitation Agency (CWSA), has a clear definition of the minimum acceptable level of service but the framework for monitoring coverage does not capture service levels. Instead, the approach is largely counting water infrastructure delivery to the population it's supposed to serve. Thus it is important to measure the water services that the users are receiving and compare with the national guidelines.

Monitoring the cost of providing water services is important. WASHCost teams in Burkina Faso, Ghana, Andhra Pradesh (India) and Mozambique collected and analysed cost and service level information for water, sanitation and hygiene in rural and peri-urban areas, applying the life-cycle costs approach. The life-cycle costs approach determine the cost of providing water, sanitation and hygiene services, and compares against the services levels the users receive. The life-cycle costs needed for the delivery of sustainable water services are capital expenditure (CapEx), operational and minor maintenance expenditure (OpEx), capital maintenance expenditure (CapManEx), expenditure on direct support (ExpDS), expenditure on indirect support (ExpInDS), etc. (Fonseca et al, 2011).

In Ghana, the rural water services are delivered through the Community Ownership and Management (COM) model where the local service authorities working through the District Water and Sanitation Teams and the Regional Water and Sanitation Teams from the regional CWSA offices are responsible for providing post-construction support to communities. The capital maintenance cost (CapManEx) is the responsibility of owners of facilities (communities, water boards and water and sanitation committees) (CWSA, 2003; and Fonseca et al, 2013).

WASHCost research in Ghana revealed that the expenditure for WASH service delivery is focussed almost exclusively on the capital expenditure (CapEx) with the assumption that the government will provide the support cost and communities through the WATSANS (water and sanitation committees) and the WSMT (Water and Sanitation Management Teams (WSMTs or water boards) will take full responsibility for recurrent expenditure. The recurrent expenditure is made up of the operational and minor maintenance (OpEx) and capital maintenance expenditure (CapManEx). The WASHCost research also revealed that the WASH sector in Ghana is not spending adequately on ExpDS and CapManEx, which is adversely affecting sustainable services delivery at the decentralised level after infrastructure provision and project interventions. The inadequate expenditure on ExpDS and CapManEx is a major contributing factor to the high non-functionality and non-reliability rates with the resultant low services delivered to users especially for those served with boreholes fitted with handpump service delivery options.

The direct support cost refers to the expenditure for supporting local-level service providers, users or user groups. It includes salaries of service authority staff [2], dedicated funds to execute key functions like monitoring, capacity building and back stopping of the community representative responsible for managing the rural water systems (Reddy et al., 2012). The capital maintenance expenditure refers to major expenditure that is spent on renewal and rehabilitation of systems, i.e., replacement of major equipment like pump sets, boreholes, plant equipment, distribution systems (Fonseca et al, 2013 & Reddy et al., 2012). The objective of the study is to determine the actual and ideal ExpDs and CapManEx for sustainable rural water service delivery in Ghana.

Methodology

The approach for the study was based on monitoring actual expenditure on direct support (ExpDS) and capital maintenance expenditure (CapManEx) and modelling what their realistic or ideal magnitudes should be. The study is based on data collected by WASHCost on actual direct support cost and recurrent cost, and decentralised level WASH services delivery budgeting exercises conducted as part of the WASHCost project.

Monitoring actual direct support and capital maintenance costs

The direct support costs ***(ExpDS)*** data generated by WASHCost comes from Community Water and Sanitation Agency (CWSA) and District Assemblies (i.e., District Water and Sanitation Teams', DWSTs) annual reports and community water management teams. The direct support costs are based on actual WASH related salaries and operational expenditure reported by the CWSA (head and regional offices) and District Water and Sanitation Teams. The CapManEx for water systems was obtained at the community level from the water and sanitation committee (WATSANs) for the point systems and the water and sanitation management teams (WSMT) for the piped schemes, as local-level service providers responsible for the management of the water systems. The cost data was collected for the past five years and adjusted to the current cost, and subsequently converted to an annual per capita cost using the design population (e.g., 300 persons per water point facility as a CWSA norm) and the actual populations from CWSA records. The direct support cost was then converted to CWSA and district per-capita figures as per capita cost based on current rural population.

Identifying the realistic direct support cost (ExpDS)

For the realistic or ideal direct support cost, the approach used in the study involved data collection during life-cycle costs approach (LCCA) training and budgeting exercises with nine (9) District Assemblies. Additional data was obtained from CWSA – WASHCost Technical Committee on Direct Support Cost for decentralised WASH services. The nine districts were from three regions namely Brong Ahafo, Northern and Volta regions. The data generated through detailed budgeting exercises was based on the question of "how much is realistically needed to ensure sustainable WASH services after the delivery of

[2] Members of district water and sanitation team in addition to district planning and budget officers.

infrastructure?" This was after participants [3] were taken through a two-day LCCA training workshop. The CWSA – WASHCost Technical Committee on Direct Support Cost provided cost of auditing visits to small town water systems for a district, CWSA regional level direct support cost and CWSA head office level direct support to regions which were not part of the district level data generation exercise. The cost data was analysed in terms of annual and per capita cost.

Results

Actual Direct Support Cost

The direct support cost was determined as the cost provided by the District Assemblies (DAs) and the CWSA. The magnitude of the cost based on WASHCost Ghana data reveals a direct support cost (ExpDS) from Community Water and Sanitation Agency (CWSA) for the rural water sector as US$ 0.32 per capita per year and that at the district level using three districts in the study ranges from US$ 0.07 to 0.24 per capita per year. This means that it cost CWSA US$ 0.32 per capita to provide its support to the rural WASH sector annually while on the average US$ 0.15 (based on the 3 districts) is used to support community user groups mainly monitoring, backstopping, training & retraining, etc. by the DAs.

Thus, on the average it cost US$ 0.47 per capita/yr to provide direct support to decentralised water (or WASH) service delivery with a figure of US$ 0.56 (approximately 0.60) per capita/yr as the upper limit. Comparison with international benchmark figures in the range of US$ 1 – 3 per capita/yr (WASHCost Project, 2012) shows that the actual direct support cost (ExpDS) in Ghana is low. The low magnitude of actual ExpDS is the reflection of the generally very low levels of post construction support activities from District Assemblies (DAs) levels in particular and also those needed from CWSA to either districts or communities, resulting in weak monitoring regimes for WATSANs and WSMTs activities.

Capital Maintenance Expenditure

The WASHCost study generated cost data for rural water point systems (boreholes fitted with handpumps). For boreholes with handpumps, capital maintenance was taken as being a handpump replacement or hydro-fracturing. Only 14 out of the 75 water point systems visited had undergone handpumps replacement and non for borehole redevelopment since construction and of these, costs were identified for only 3 systems. These three handpump replacements cost US$ 800 each in 2005, and analysis over the 25 – 26 years of their service life gives an average capital maintenance cost of approximately US$ 83 per year when adjusted with cost deflators. This also translates into US$ 0.30 per capita/yr based on the design population of 300 users per facility but US$ 0.5 per capita/yr for actual average population of 166 users per facility (based on 31 study communities with 75 water facilities). These cost figures are less than the global benchmark of US$ 1.5 to US$ 2 per capita/yr (WASHCost, 2012).

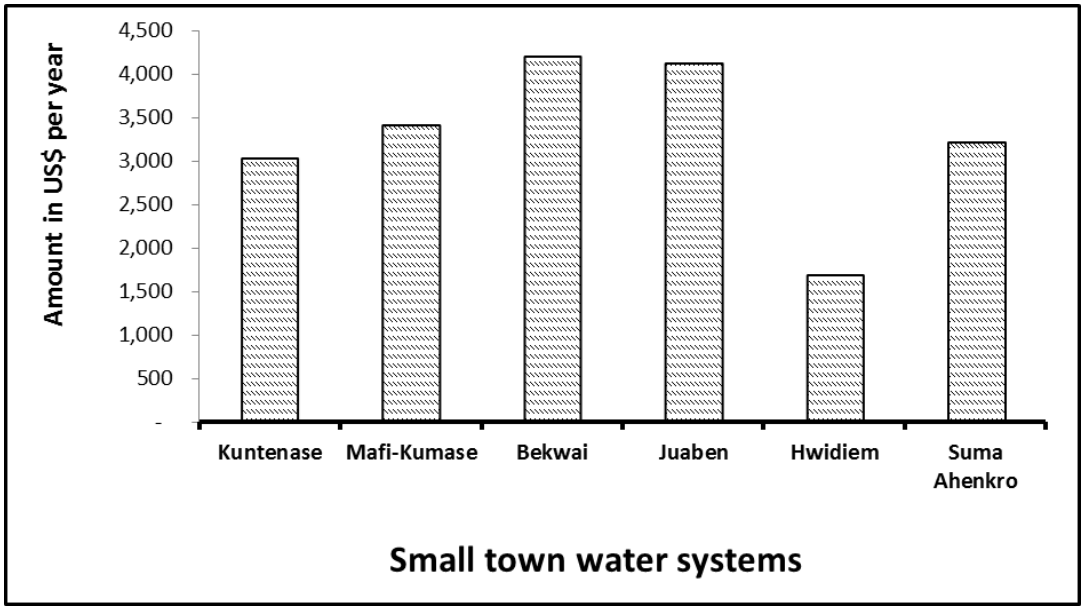
The magnitude of CapManEx for the small towns piped water systems were based on six well-performing systems that could provide indicative levels of capital maintenance

[3] Participants were district water and sanitation teams involving engineers, planning officers, budgeting officers, etc.

expenditure (CapManEx). The actual CapManEx of these water systems ranges from US$ 1,680 to US$ 4,179 per year which translates into per capita annual cost of US$ 0.04 to US$ 1. Also, the average CapManEx for these six systems is US$ 3,273 per year which is equivalent to US$ 0.37 per capita/yr.

The CapManEx for these systems are shown in Figure 1 below.

Figure 1: CapManEx of small town water systems from case studies.



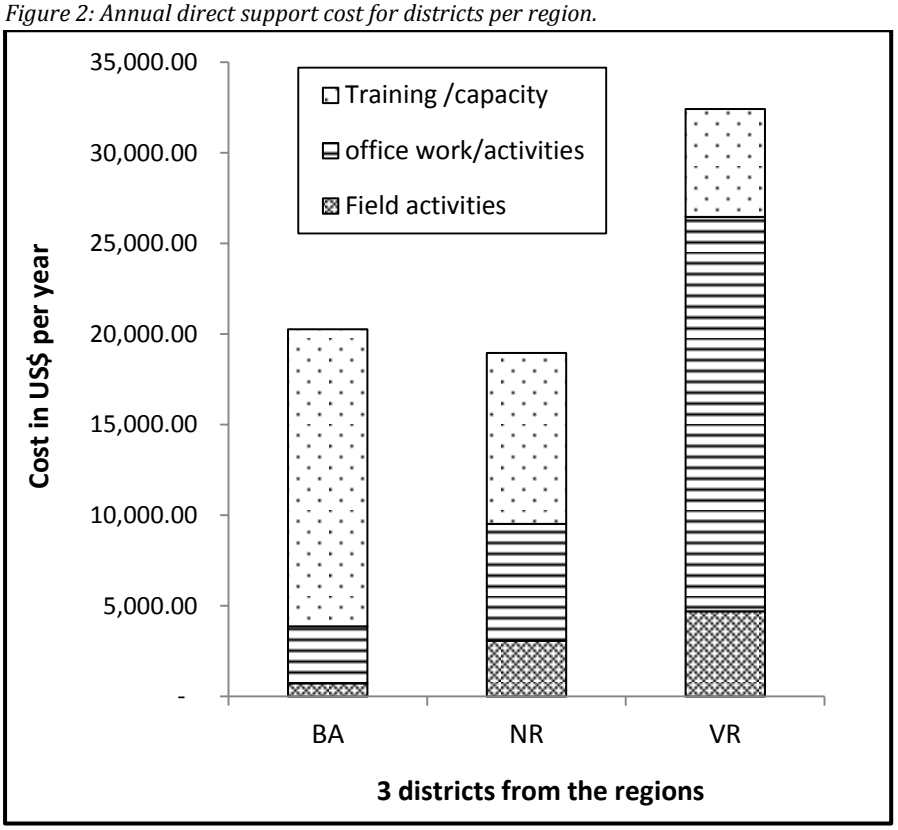
Comparing the magnitude of these CapManEx with the global WASHCost benchmarks of US$ 3 – 15 per capita/yr (WASHCost, 2012) indicates that the water systems have CapManEx magnitude far lower than the international benchmarks. The low levels of CapManEx found in Ghana is indicative for similar small towns water systems used in the rural water sector in the country since they are among the few well-performing systems in Ghana. The question then is: are these systems "healthy" to ensuring sustainable services looking at these figures? The answer could be "yes" since these systems are known to be well-performing, they are relatively new systems (with an average age of 10 years old), and also the magnitude could be lower compared to the benchmarks likely because data available to the study is based on recent five years (2007 to 2011) operations and maintenance records.

Magnitude of ideal direct support cost

The results of the modelling exercise with the nine districts in three regions show the key areas of direct support activities in the districts. These key activities are office work, training and capacity building, field work and spare parts supply but excluding salaries which are paid outside the district budget by the central government.

Figure 2 below shows the magnitude of ideal district direct support cost.

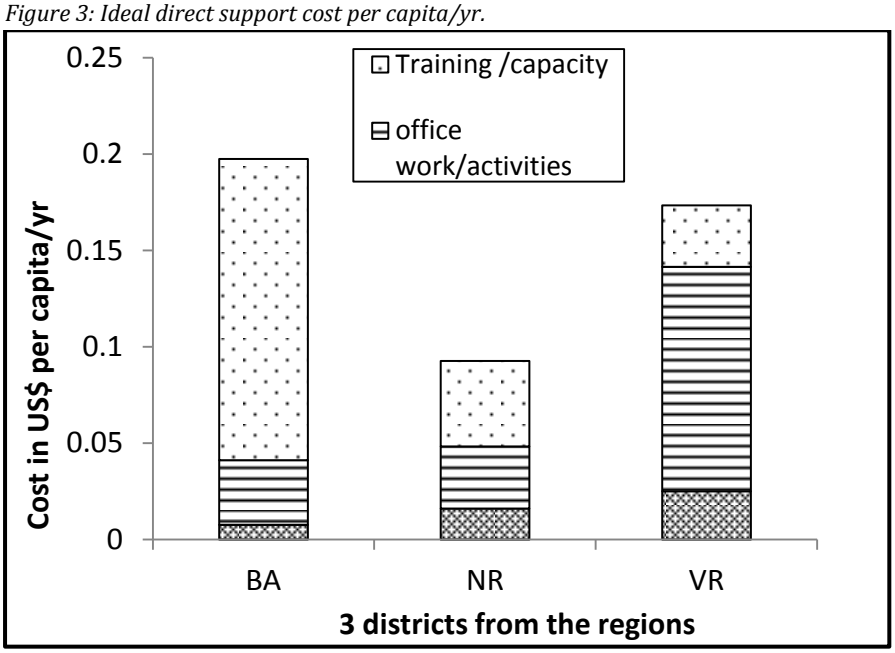
Figure 2: Annual direct support cost for districts per region.



The average direct support cost of districts per region ranges from US$ 18,000 to US$ 32,000 per year. The significant cost components are the training/capacity building, and office activities. Districts from Volta region (VR) have the highest cost dominated by office activities which are mainly cost of vehicles and motor bikes. The districts from Brong Ahafo (BA) have the highest cost for training and capacity building with fuel cost as the highest cost component for pick-up vehicles whereas the other districts were using motor bikes. This gives clear indication of differential intensive direct support cost components of the various DAs.

The direct support cost per capita excluding salaries is shown in Figure 3 below.

Figure 3: Ideal direct support cost per capita/yr.



The per capita annual direct support cost ranges from US$ 0.1 to US$ 0.2. The least cost component is field activities/work with an average around US$ 0.01 per capita/yr. This cost is mainly expenditure on fuel, lubricants, field gadgets and allowance for officers to monitor the work of the WATSANS and the WSMTs. Districts from Volta Region have highest budget for field activities compared to the rest mainly due to high allowance and frequency of visits. Moreover, the cost of field activities which covers monitoring and evaluation of WASH facilities, management systems and users groups is the least of all direct cost component from the study. This also means these local authorities generally appreciate the need to build the capacity of local-level service providers (WATSANs and WSMTs) and at the same time indicate clearly that their offices (and activities at that level) are struggling and need to be supported.

Additional support cost from CWSA regional level

The budgeting exercise with the district did not capture the expenditure on direct support from the regional CWSA level. The direct support cost component from the regional CWSA level was obtained from CWSA-WASHCost Technical Committee on Direct Support. Table 1 below provides the extra direct support cost classes that were not considered at the district level budgeting exercises but were part of the CWSA-WASHCost Technical Committee on Direct Support findings.

Table 1: Additional direct support cost from the C-WTCDS.

Direct support cost group	**Amount GHC/yr**
Audit visits to small town water systems (per district)	6,825
CWSA regional level cost (per region)	231,869
CWSA Head Office level cost (monitoring visits to all regions)	4,680

Source: Draft report of CWSA-WASHCost Technical Committee on Direct Support Cost, 2012.

The annual cost for auditing small towns in each district is GH¢ 6,825 ([4]US$ 4,840) which translates into a range from US$ 0.02 to 0.05 per capita/yr for auditing small towns. This is based on an average of 5 small towns' water systems per district. Therefore the total amount need per person for field activities at the district level ranges between US$ 0.04 and US$ 0.06.

At the regional level, the total direct support cost from US$ 0.14 to US$ 0.16 per capita/yr while that of the head office support in terms of regional monitoring visits is US$ 0.0003 per capita/yr, which is relatively small.

If the district support cost gathered for the nine districts are indicative of their respective regions, then the total direct support needed for decentralised WASH services delivery is around US$ 23,000 per year (i.e., US$ 0.24 per cap/yr) for Northern region, US$ 25,000 per year (i.e., US$ 0.35 per cap/yr) for Brong Ahafo region, and US$ 37,000 per year (i.e., US$ 0.33 per cap/yr) for Volta region excluding salaries.

Conclusions

The monitoring of the direct support cost and capital maintenance expenditure based on the WASHCost project demonstrates that it is indeed possible to monitor existing expenditure levels for all the life-cycle cost components. The results of the monitoring were further used for planning and budgeting with key stakeholders to identify the ideal direct support cost needed to provide sustainable service. The magnitude of the direct support cost and capital maintenance are relatively low in comparison with the international benchmarks. On-going monitoring of both the life cycle cost and the service levels will be useful to determine the ideal magnitude of the life cycle cost for delivering sustainable rural WASH services in Ghana.

The methodology for monitoring the ExpDS and CapManEx worked well. If the monitoring of life-cycle cost components and WASH service levels are mainstreamed in regular WASH monitoring it will provide useful information for providing sustainable WASH services.

A key input for the service providers to deliver sustainable WASH service is dedicated funds to cover direct support cost. The government should therefore allocate sufficient funds for direct support cost that should covers training and capacity building and field activities (monitoring and evaluation). Furthermore financing mechanism to address capital maintenance expenditure for rural water and small towns should be made explicit. Planning, budgeting and making available at least US$ 1 per capita per year (excluding salaries) could help solve the challenge of high rates of non-functional WASH facilities and dormant WASH management committees mostly link with inadequate monitoring and evaluation.

[4] US$ 1 is equivalent to GHC 1.41 for 2011.

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