triple-S
WATER SERVICES THAT LAST

WORKING PAPER

The status of rural water services in Ghana

A synthesis of findings from 3 districts

(Akatsi, Sunyani West and East Gonja Districts)

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an initiative of IRC

COMMUNITY WATER AND SANITATION AGENCY

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Front page photo

Photos of water facilities from the three study districts, collected by district staff during the data collection exercise, using mobile phones; and photos of the data collectors' training.
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Triple-S

The Sustainable Services at Scale (Triple-S) initiative is a six-year (2009-2014) multi-country learning project to improve rural water delivery by transforming the current piecemeal approach into one characterised by the provision of planned and integrated water services. Triple-S is an initiative of IRC International Water and Sanitation Centre. It aims to facilitate a shift from project-based, one-off construction of water supply systems to infinitely sustainable rural water services delivered at scale. It seeks to tackle long-term challenges of sustainable water supply by contributing to a shift from an "infrastructure approach" to a **service delivery approach** for the **rural water** sector through action research, working with government and sector stakeholders as well as research, documentation, dissemination and advocacy partnerships, both nationally and internationally.

Although there are clearly variations across countries and between regions in many aspects of the water sector, Triple-S believes that three major adaptations or strategy areas are needed to address the sustainability challenge:

- **Adopting a Service Delivery Approach**. This approach promotes a shift from projects to services. This means taking the perspective of a service instead of projects (or groups of projects under programmes), in which policy, institutional arrangements, planning, financing and governance of the sector all support water services at scale for rural populations;
- **Supporting a strong learning and adaptive capacity for water service delivery.** This means a sector with the capacity to learn, innovate and adapt to changing circumstances and demands that are necessary to ensure that service delivery approaches continue to be maintained for rural populations;
- **Improving harmonisation and alignment for water service delivery.** This means greater harmonisation of donor efforts at both operational and national levels, as well as better coordination and alignment of these efforts behind government-led strategies for service delivery to rural populations.

In Ghana, the Triple-S initiative is hosted by the Community Water and Sanitation Agency (CWSA).

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Executive summary

This report presents a synthesis of the results of a baseline assessment of the status of service levels, service providers and support functions in three districts in Ghana. The main objective of the report is to identify strengths and gaps in the provision of sustainable water services at service provision and district levels, particularly in terms of compliance with the Community Water and Sanitation Agency (CWSA) norms and standards for service levels, and service provider and service authority functions.

A set of indicators was developed to assess and monitor sustainable service provision. These indicators were informed by the norms, standards and guidelines set by CWSA and included markers on:

- Point source and piped scheme functionality
- Service level provided by the facility (based on reliability, accessibility (in terms of crowding and distance to the facility), water quality and water quantity)
- Community-based water service provider indicators, related to governance, operations and financial management
- Service authority indicators, related to support to community-based water service providers and other service authority functions (planning, budgeting, coordination, etc)

Between October 2011 and January 2012, baseline data were collected in order to score and benchmark facilities, service providers and service authorities against the agreed indicators. The data collection exercise was undertaken by district-level staff, using mobile phone technology, in three districts: Akatsi district in Volta Region, East Gonja in Northern Region and Sunyani West in Brong Ahafo Region.

The study showed a high level of non-compliance with CWSA norms and standards, at service provision level, water service provider – Water and Sanitation Committee (WATSAN) and Water and Sanitation Development Board (WSDB) – level and at service authority (district assembly) level.

Functionality is higher for piped schemes than for point sources. About a third of all point sources in the three study districts were not functioning well (these were either broken down or did not pass the stroke and/or leakage tests), while the majority of the piped schemes were functioning.

The majority of water supply facilities do not provide a basic level of service, as per the standards set for the community water sub-sector on reliability, maximum number of people per point source (crowding), maximum distance to the facility and water quantity. The water supply facilities in the three study districts provide basic (reliable, non-crowded) services (providing at least 20 litres per capita per day of water of acceptable quality, within 500 metres of the user community), to about 20% of the people which they serve. In East Gonja and Sunyani West, only 2% and 3% respectively of point sources provide a basic level of service.

Many WATSANs did not meet the service provider benchmarks. WATSANs scored especially low on the financial management indicators. Community-based piped scheme water service providers, WSDBs, generally scored lower than the WATSANs. Part of the reason for this could be that the benchmarks are set higher for the WSDBs than for the WATSANs.

Point sources managed by a WATSAN committee did not necessarily provide higher levels of services than point sources not managed by WATSANs. However, point sources managed by WATSANs with adequate preventive maintenance, spare parts supply and financial management, do provide more reliable services.

Although tariffs are relatively high (far higher than the tariff charged by the Ghana Water Company Ltd), annual revenues are much lower than expected, based on an estimated average utilization rate of 18-20 lpcd for each member of the user community. This is due to low consumption levels and / or high rates of utilization of non-revenue water. Therefore, revenue levels, though generally high enough to cover current annual expenditure, are likely to be too low to cover the operational and minor maintenance costs and costs of capital maintenance expenditure needed to sustain at least a basic level of water services.

Overall, water authorities scored very low on the service authority indicators. With the exception of Akatsi, where monitoring support to point source and piped scheme service providers had been high, scores on the service authority function indicators were generally very low. That means that districts are hardy complying with their mandate of providing support to the community-based service providers, and often lack the capacity to do so. More attention needs to be given to the service authority functions. This support can lead to better performing community-based service providers, which can in turn lead to more reliable supplies and hence higher levels of services.

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Abbreviations

AFD	Agence Française de Développement (French Development Agency)
CIDA	Canada International Development Agency
COM	Community Ownership and Management
CONIWAS	Coalition of NGOs in the Water and Sanitation Sector
CSO	Civil Society Organisation
CWSA	Community Water and Sanitation Agency
DA	District Assembly
Danida	Danish International Development Agency
DiMES	District Monitoring and Evaluation System
DP	Development Partner
DWSP	District Water and Sanitation Plan
DWST	District Water and Sanitation Team
EHSD	Environmental Health and Sanitation Directorate
EU	European Union
FLOW	Field Level Operations Watch
GHC	Ghana Cedi (Currency of Ghana)
GoG	Government of Ghana
GSB	Ghana Standards Board
GSS	Ghana Statistical Services
GTZ	Gesellschaft für Technische Zusammenarbeit
GWCL	Ghana Water Corporation Ltd
HH	Household
IDA	International Development Association
JICA	Japan International Cooperation Agency
KNUST	Kwame Nkruma Univesity of Science and Technology
KfW	Kreditanstalt für Wiederaufbau (German Development Bank)
lpcd	Litres per capita per day
M&E	Monitoring and Evaluation
MDG	Millennium Development Goal

MLGRD	Ministry for Local Government and Rural Development
MMDA	Metropolitan, Municipal and District Assembly
MoFEP	Ministry of Finance and Economic Planning
MOM	Monitoring Operations and Maintenance
MoU	Memorandum of Understanding
MWRWH	Ministry for Water Resources, Works and Housing
NGO	Non-Government Organisation
NWP	National Water Policy
PAYF	Pay As You Fetch
PIM	Project Implementation Manual
PO	Private Operator
PURC	Public Utilities Regulatory Commission
RCC	Regional Coordinating Council
RWST	Regional Water and Sanitation Team
RWSN	Rural Water supply Network
SDM	Service Delivery Model
SIP	Strategic Investment Plan
TA	Technical Assistance
UNICEF	United Nations Children's Fund
WATSAN	Water and Sanitation Committee
WD	Water Directorate
WRC	Water Research Commission
WRI	Water Research Institute
WSDB	Water and Sanitation Development Board

1 Introduction and background

Rural water supply is reported to cover 63% of the rural population of Ghana (CWSA Annual Report 2011), thereby putting the country on track to achieving the MDG target for water. However, behind this apparent success are a complex set of challenges which need addressing to turn newly provided water delivery infrastructure into sustainable services.

The sustainability of rural water supplies remains problematic in much of sub-Saharan Africa. Different studies estimate functionality of rural water supply schemes to be between 30 and 40% (Evans, 1992; Lockwood and Smits, 2011; RWSN, 2007). The corresponding level of failure represents a total investment of between $1.2 and $1.5 billion in the last 20 years. That equates to approximately $60 million wasted per year (RWSN, 2009). Appreciating the degree of non-functionality and understanding the underlying reasons will be crucial to defining appropriate actions to improve the situation.

Also in Ghana, a substantial proportion of water supply infrastructure is believed to be either not-functioning or functioning sub-optimally at any given time. Because of the lack of an effective monitoring system, data to back-up this impression is lacking in Ghana. The Community Water and Sanitation Agency (CWSA) has made progress with the establishment of such a monitoring system, with the development of an elaborate Microsoft Access-based District Monitoring and Evaluation System (DiMES), but has been struggling with operationalising this system and feeding it with (real-time) data. Furthermore, as in many other countries, the focus has primarily been on coverage measured in terms of number of systems built and people served, without taking into account the fact that, without proper support for operations and planning for maintenance and replacement, systems break down and services deteriorate. Monitoring to enable the tracking, over time, of service levels and the performance of key technical, financial and management functions will be crucial to allowing problems to be anticipated and addressed effectively.

Therefore, under the Triple-S initiative, CWSA and IRC are working together to improve monitoring of service provision in the country. This work has several components:

- Developing and testing a set of indicators which would allow a more comprehensive monitoring of sustainable service delivery, based on CWSA norms and standards;
- Assessing the current status of service delivery in terms of the level of compliance of service levels, performance of community-based service providers and support functions with the CWSA norms, standards and guidelines, using the indicator set mentioned above;
- Assessing the potential to improve data collection using mobile phone technology through the application of a system called FLOW (Field Level Operations Watch).

This report presents a synthesis of the results of the baseline assessment of the status of service levels, service providers and support functions, in three districts in Ghana. The main objective of this report is to present strengths and gaps in the provision of sustainable water services at service provision and district levels, particularly in terms of compliance with the CWSA norms and standards for service levels as well as service provider and service authority functions. Through the baseline study, the service level and

sustainability indicators were tested and recommendations for improving these indicators are presented in this report. The other components of the work are presented in different reports[1].

The results of this assessment are first, intended as an input to district-level planning towards addressing these gaps. Further, this assessment serves as a baseline for the work that Triple-S is carrying out in these districts to improve service delivery. Apart from the potential use of these data at district level, it was also felt that the results have potential for a wider use in the country for policy formulation and operational system definition, hence this synthesis report. The data were used to identify relationships between service level, service provider and service authority functions, so as to inform broader policy discussions on strengthening the service delivery models in use in the country.

1.1 Outline of this document

Following this introduction, describing the background to the study, the conceptual framework and methodology are introduced in chapter 2. This is followed by an introduction of the context of the study in chapter 3. The results from the assessment of the water facilities and the level of services that they provide are presented in chapter 4, while chapter 5 focuses on the assessment of community-based service providers (WATSANs managing point sources; and WSDBs, managing piped schemes[2]). The sixth chapter presents an assessments the performance of service authorities (District Water and Sanitation Teams) providing support to the service providers. Chapter 7 presents and discusses correlations between the functionality and reliability of water supply facilities, the level of service the facilities provide, the performance of the service providers and the support they receive from the service authorities. Conclusions and recommendations are finally presented in chapter 8. The annex of this report presents scoring tables related to the analysis presented in chapters 5 and 6.

Throughout the document, reference is made to the separate Appendix, containing a multitude of tables, maps and graphs and presenting further analyses of the results. This Appendix is a separate document, which can be found on the 'water services that last' website[3]. The outline of this Appendix follows that of the main synthesis document.

[1] The document containing the draft indicators, including the data collection questions and scoring tables, can be found on the following website: http://www.waterservicesthatlast.org/Media/Files/draft_indicators_for_evaluating_sustainable_rural_water_services_in_ghana. For more information on the use of mobile phone technology in monitoring, see Dickinson et al, forthcoming.

[2] After the development of the indicators, it was decided that the sector should in future refer to WATSAN Committees and Water and Sanitation Development Boards (WSDBs) as "Water and Sanitation Management Teams" (WSMTs). This decision was taken in order to avert the political connotation around the term "Board", which had in the past led to political interference in the composition of WSDBs after changes in political leadership. However, as this study was done before this change had been effected and to differentiate between point-source management structures and piped scheme management structures, this report will refer to WATSANs and WSDBs.

[3] http://www.waterservicesthatlast.org/index.php/content/download/1955/12102/file/Synthesis%20Appendix_final.pdf

2 Conceptual framework and methodology

This chapter presents the conceptual framework, including the indicators developed to assess and monitor water services and the conditions needed to ensure the sustainable provision of water services. First the concept of functionality is discussed, including how it is defined and used here. However, functionality is not synonymous with sustainability and does not say anything about the level of service that is provided. Therefore, a separate set of service level indicators have been developed, along with other indicators to measure the performance of service providers and service authorities. Together, these will better enable practitioners to assess and monitor whether the conditions needed for sustainable water service provision are in place. The second part of this chapter describes the methodology of this study.

2.1.1 Functionality

Assessing the functionality of water supply infrastructure can provide a picture of the state of water infrastructure at a particular time. However, it is important to clearly define what is meant by 'functionality'.

For the purposes of this study, functionality was based on parameters established by the CWSA Working Group on Functionality. Functionality of point sources can be determined by performing stroke and leakage tests (see Box 1). Point sources that pass both tests are considered functional. Point sources that pass only one of the two tests are considered partially functional. Point sources that do not pass either test are considered non-functional. In cases where the tests cannot be executed because of complete breakdown of the facility, the point sources are classified as "broken down".

Stroke test:
For the stoke test, the number of hand pump strokes needed to fill a "size 34" bucket (18 to 20 litres) is determined. For a facility to pass the stroke test, it must take a maximum of 40 strokes, administered within one minute, to fill the bucket for Afridev and Ghana Modified India Mark II and 30 strokes for Nira AF-85 hand pump

Leakage test:
For the leakage test, pumping is resumed after five minutes rest following the stroke test. If water flows from the hand pump within five strokes, the pump has passed the leakage test.

Functionality of a piped system can be assessed at two levels:

- The functionality of the supply system, which includes the intake and treatment system. The supply system can be classified as fully functioning, partially functioning or non-functioning, based on whether or not the head works are fully, partially or non-functioning.
- The functionality of the distribution system, which includes the piped network, standpipes and household connections. This can be expressed in terms of percentage of functioning household connections and standpipes.

As functionality only gives an indication of whether or not water facilities are working, and not whether it is providing the water services that it should be providing, it is essential to look beyond functionality of facilities and also assess water service provided by water facilities and the level of service that people are receiving in a certain geographical area. A facility that is functioning at a certain point in time can be broken down for considerable lengths of time. Further, a functioning facility can be providing water of an unacceptable quality or quantity, or can be hard to access, for example because of the distance or because too many people depend on that facility. In that case, the system may be functioning, but is not providing a high level of service. There is thus a need to assess not only functionality, but also to look at functionality over time (reliability) and other water service characteristics, like accessibility of the services and the

quality and quantity of water provided and used. Further, it is important to also assess whether management structures and service provision and support arrangements are in place to ensure that the facility is not only providing water services today, but has a high chance of doing so for a long time to come.

2.1.2 Defining sustainable water services and indicators for measuring this

Water services can be defined as the supply of a certain quantity of water, of a certain quality, accessibility and reliability. Service should ideally be assessed and monitored from a user perspective: what is the level of service that people have access to (in terms of quantity, quality, reliability and accessibility) and what is the level of service that they are actually using (in terms of amount and quality of water)? For this study, the focus is on the level of service provided by facilities in terms of the quantity and quality of water that they provide and the accessibility and reliability of the service provided, taking facilities as the starting point.

In order to assess and monitor the provision of services provided by facilities, **service level indicators** have been developed and benchmarks set against which to assess and monitor water services.

In the context of the rural water sector, sustainability is often defined as the maintenance of the perceived benefit (including convenience, time savings, livelihoods or health improvements) of investment projects, after the end of the active period of implementation. More simply, and less project focused, sustainability can be defined as: "whether or not something continues to work over time" (Lockwood and Smits, 2011; Abrams et al., 1998), meaning, in this case, whether or not water continues to flow over time.

Sustainability of the service is affected by a range of factors. These factors include the technical or physical attributes of the system, the financial, organisational, institutional (support functions) and managerial capacities of the service provider, which indicate the likelihood of the service continuing to be provided over time. It is remarkable that no internationally agreed indicators exist for measuring "sustainability" or functionality of rural water supply systems (Lockwood and Smits, 2011; Lockwood et al., 2010). Even though, in practice, different countries use definitions and indicators for sustainability, for this study we understand sustainability to be the indefinite provision of a water service with certain agreed characteristics over time.

Thus, in addition to the service level indicators, it is important to assess and monitor the underlying factors that make services sustainable, such as adequate management capacity, tariff recovery and technical backstopping (Lockwood and Le Gouais, 2011). As such, monitoring ought to include the performance of water service providers as well as of service authorities.

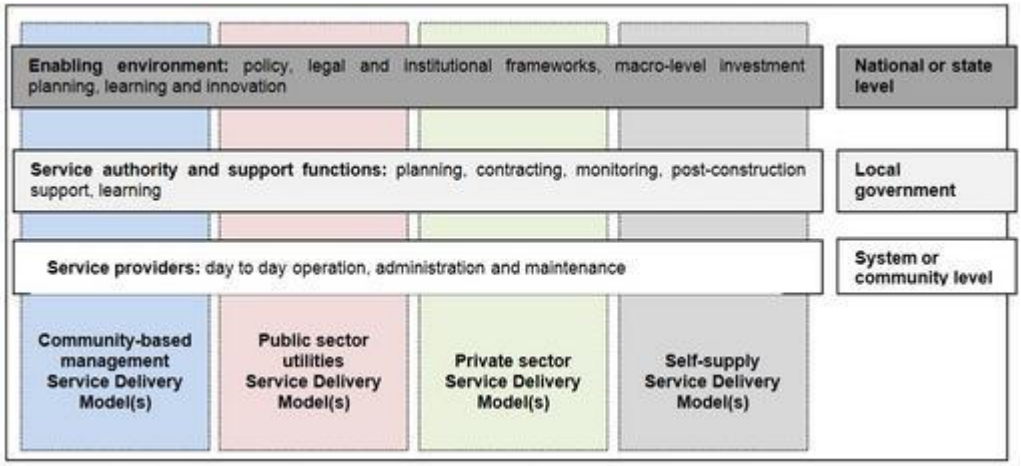
Lockwood and Smits (2011) define **service provision functions** as those functions related to the actual day-to-day provision of water services to users. These include tasks such as operation, maintenance and administration of the water scheme. **Service authority functions** include direct support, performance regulation, planning and coordination at decentralised level. These functions are generally provided at the level between the community and the national level which, in Ghana, comprises the district and regional levels. In order for the water service providers and service authorities to perform their tasks, an **enabling environment** is needed from a higher, often national, level including the setting of targets, policy making, regulation and capacity support to the service authorities.

Service delivery models describe the 'how to' of applying the service delivery approach. This includes the policy, legal, institutional, financial, governance and normative frameworks that determine what services will be provided to consumers (of the service), and how this will be done. Service Delivery Models are country-specific and may include different management arrangements appropriate to the country or to

local conditions and desired service levels. Indicators for assessing the level of services provided should be set at national level, irrespective of the model under which the services are provided. This will allow for comparing service levels between different service delivery models. Indicators for assessing service authority functions have to be set irrespective of the service delivery models as well, as the service authority functions relate to multiple Service Delivery Models.

As different models will have different management requirements related to the service provider functions, a separate set of indicators to assess the performance of the water service provider will have to be set for the different water service providers under the different models. Below is a discussion of the different indicators used for this study.

Figure 1: Functions, levels and service delivery models



Source: Lockwood and Smits, 2011

2.1.3 Service level indicators

As mentioned above, service levels can be assessed in terms of the quantity and quality of provided water, the reliability of the services and the accessibility, in terms of distance and crowding.

In Ghana, it is the Community Water and Sanitation Agency, which is responsible for setting and regulating standards related to rural water service provision. The Community Water and Sanitation Agency (CWSA) Regulations Legislative Instrument (L.I. 2007) of 2011 sets out the following standards for the sub-sector:

- 'A person who designs a community water facility shall ensure that each person in a served community has access to not less than twenty litres of water per day;
- The walking distance to a water facility or delivery point in the case of a piped scheme does not exceed five hundred metres from the farthest house in the community or a section of the community;
- The facility provides safe water to the community throughout the year'.

For piped systems, the Legislative Instrument states that the delivery of water should be virtually uninterrupted, at least ninety-five per cent of the time. This means that the facility should provide services for at least 347 days in the year (i.e. a maximum of 18 days downtime). Regarding water quality, the Legislative Instrument further stipulates that the quality of the water provided should comply with the parameters for the physical and bacteriological monitoring determined by the Ghana Standards Board, GS 179-1:2009 3rd Edition Standards.

Further, CWSA's design guidelines for small communities and small towns (forthcoming) stipulate that the maximum number of people per borehole or standpipe should not exceed 300. For hand-dug wells, the maximum number of users should be 150.

Table 1 gives an overview of these standards set by CWSA related to the main service level indicators.

Table 1: Service level sub-indicators and standards, as set by CWSA

Service level sub-indicators	Benchmark
Quantity	20 litres per capita per day
Quality	Ghana Standards Board water quality standards
Crowding: maximum number of people per facility	Point source / standpipe: 300 Hand-dug well: 150
Distance to water point	Maximum of 500 metres
Reliability	The facility provides water for at least 95% of the year, interpreted as at least 347 days of regular service without interruption.

A composite indicator for assessing and monitoring water service levels can be devised based on these sub-indicators, through the application of a scoring system, using a water ladder[4]. The concept of a 'service ladder' is useful in this case to better understand that when we refer to sustainability – or the lack of it – consumers can move up and down a continuum from 'no service' (which is effectively an insecure or unimproved source) to a high service, where access is on demand at, or very close by to, the household. Applying these Ghana standards, a water service ladder can be constructed to indicate the overall level of service provided by a facility, as presented in Table 2.

Table 2: Ghana water service ladder

Service level	Score	Description of service level
High level service	100	The facility provides a minimum of 60 litres per capita per day (lpcd) of high quality water on demand.
Intermediate level service	75	The facility provides people with a minimum of 40 lpcd of reliable water services in line with the minimum criteria for water quantity, crowding and distance.
Basic level service (Benchmark)	50	The facility provides reliable water services (at least 347 days (95%) of the year) that are in line with the minimum criteria of providing 20 lpcd of acceptable quality water (GSB), at a distance no more than 500 m, with not more than 300 people using the hand pump, in the case of a bore hole, and 150 people, in the case of a hand-dug well.
Sub-standard level service	25	The facility provides water services which are an improvement on not having water services at all, but fails to meet the basic standards on one or more criteria (quantity, quality, reliability, distance, crowding).
No service	0	The facility is broken down or not used

Source: adapted from Moriarty et al, 2010

Point sources in Ghana are supposed to at least provide water services at a basic service level. Limited mechanised boreholes and small community systems providing water services through standpipes are expected to provide a similar level of service as point sources. Small community and small town piped systems often provide services through a mix of standpipes delivering a basic level of service and household connections, providing a high level of service. According to the CWSA design guidelines for small towns and small communities (forthcoming), the design of piped systems should cater for a design demand of 60 litres per capita per day for household connections. Based on the proportion of people served by standpipes and

[4] For more background on the development of service level indicators and water service ladders, see WASHCost Ghana Briefing Note 1, "Life-cycle costs in Ghana: background and methodology", and WASHCost Working Paper 2, "Ladders for assessing and costing water service delivery"

household connections, the service level score of a small town piped system can be determined, as indicated in Table 3.

Table 3: Service level score of a small piped system

	Score	% of population served at service level				
		Point source / small community piped system with a population under 2000	**Small town piped system, with a population of:**			
			2000 - 5000	**5000 - 15000**	**15000 - 30000**	**30000 - 50000**
Percentage of people using household connections (High level service)	100		10%	15%	20%	25%
Percentage of people using standpipes (Basic service level)	50	100%	90%	85%	80%	75%
Service level score:		50	55	57.5	60	62.5

A similar method can be applied to determine an average service level score for an area. The service level score of an area can be determined based on the proportion of the population with access to different levels of services (and the score that comes with it).

2.1.4 Service provider and service authority indicators

Service provider and authority indicators are used to assess the degree to which *conditions* for sustainable service delivery have been put in place at district level.

CWSA has defined guidelines and standards to guide service providers and district assemblies. The service provision and authority indicators give an indication of the degree of compliance with these arrangements and structures as described in the CWSA standards and guidelines, including the model by-law for WSDBs. S**ervice provider indicators** cover compliance by service providers, like WATSAN committees and WSDBs, while service authority indicators are used to assess compliance by district assemblies and specialised agencies which fulfil service authority functions like the provision of direct support to the service providers and planning and coordination related to the development and provision of WASH services.

There are three categories of service provider indicators:

- Governance indicators,
- Operations indicators, and
- Financial management indicators.

Based on the performance on a number of sub-indicators, each indicator is scored on a scale from 0 to 100. Small narrative descriptions have been developed for each score. For each indicator, a benchmark of the minimum acceptable score on that indicator has been set. Table 4 gives an overview of the sustainability

indicators. For a full overview of the indicators, sub-indicators, scoring tables and benchmarks, see CWSA and IRC, 2012.

Table 4: Overview of sustainability indicators

<table>
<tr><th></th><th></th><th>WATSAN committee managing point source</th><th>WSDB / WSDT managing a piped system</th></tr>
<tr><td rowspan="9">Service provider indicators</td><td rowspan="3">Governance</td><td colspan="2">A well-qualified, trained, experienced and gender-balanced WATSAN committee / WSDT is in place</td></tr>
<tr><td colspan="2">Technical, administrative and financial reports are kept and read out to the community at least once every six months</td></tr>
<tr><td colspan="2">There is no political or chieftaincy influence in the composition of the WATSAN committee or WSDT</td></tr>
<tr><td rowspan="5">Operations</td><td>Spare parts are available to enable maintenance</td><td rowspan="2"></td></tr>
<tr><td>Area mechanics are available to carry out maintenance</td><td rowspan="2">The private sector provides the needed support to the WSDT</td></tr>
<tr><td>Corrective maintenance is executed in an effective way</td><td rowspan="2"></td></tr>
<tr><td>Periodic maintenance is executed in an effective way</td><td rowspan="2">The WSDT prepares a work plan and budget for operations and maintenance (O&M) and executes maintenance accordingly</td></tr>
<tr><td colspan="2">Water quality sampling and analysis (WQSA) services are performed on half yearly basis by recognised institutions</td></tr>
<tr><td rowspan="3">Financial management</td><td colspan="2">Annual income from water sales exceeds total annual expenditure</td></tr>
<tr><td colspan="2">There is sound financial management, accounting and auditing</td></tr>
<tr><td colspan="2">Tariff setting takes into account life-cycle costs – for example, minor O&M expenditures, capital maintenance expenditures for major rehabilitations, and cost of capital (e.g. interest on a loan).</td></tr>
<tr><td rowspan="7">Service authority indicators</td><td colspan="3">District Water and Sanitation Team (DWST) monitors O&M of water facilities in terms of financial, technical and administrative performance, including periodic audits, and provides support where needed</td></tr>
<tr><td colspan="3">There is a well-resourced DWST, consisting of 3 well qualified and experienced staff members, receiving the needed support from CWSA and their respective Metropolitan, Municipal or District Assembly (MMDA).</td></tr>
<tr><td colspan="3">There are efficient monitoring and data flows</td></tr>
<tr><td colspan="3">District Water and Sanitation Plan is incorporated into Medium Term Development Plan and budget of the assembly, which is used to guide implementation</td></tr>
<tr><td colspan="3">Districts are able to allocate and utilise financial resources for water and sanitation services</td></tr>
<tr><td colspan="3">By-laws for the WATSANs and WSDTs exist and are enforced effectively</td></tr>
<tr><td colspan="3">NGOs and Civil Society Organisations (CSO) providing water facilities do so in coordination with the MMDA</td></tr>
</table>

2.2 Methodology

The study applied an action research methodology, working closely with key stakeholders at every step of the research process including the conceptualization, definition of indicators and methodology, and data collection and analysis. Employing short loop feedback cycles, the research team shared and discussed preliminary data with key stakeholders at different stages of the research process (not just at the end). The methodology combined research (data collection and analysis to get a better understanding of water service provision) with action (development, testing and refinement of indicators and processes to improve monitoring). The rest of this section presents the process of indicator development, the scope of the study, the data collection and analysis process and the limitations of the study.

2.2.1 Development of indicators

The indicators and scoring systems were developed by the CWSA Monitoring and Evaluation Working Group, in close collaboration with Triple-S, based on the existing national guidelines, manuals and model by-laws. A set of draft indicators and scoring tables were reviewed by CWSA's Technical Committee on Wednesday 10 November 2010 and by national level sector stakeholders during the National Level Learning Alliance Platform[5] meeting of Thursday 11 November 2010. Based on the suggestions and comments received, the indicators and scoring systems were refined. The resulting indicators and scoring systems were used as a framework for analysis in a "looking back in order to inform the way forward" study in Volta Region and Northern Region (forthcoming), which led to further minor adjustments to the indicators.

Following the experience with these case studies, it was decided to develop standard 'assessment questions' in order to collect the required data to more easily and unambiguously score the indicators on a larger scale. These questions were field tested in the second half of 2011, resulting in further refinements to some of the indicators, questions and the scoring systems, which were used for the collection of baseline data in the three Triple-S focus districts from November 2011 till January 2012.

The findings of the baseline study will serve as an input to further refinement and finalisation of the indicators by the Monitoring and Evaluation Working Group.

2.2.2 Scope

Under this study, data on service levels and service providers has been collected for all existing rural and small town facilities and community-based service providers in Akatsi District in the Volta Region, Sunyani-West District in the Brong Ahafo Region and East Gonja District in the Northern Region of Ghana. The service providers assessed were the WATSAN committees and WSDB/WSDTs. Facilities included point sources (boreholes or hand-dug wells with hand pumps) or piped systems (community-managed systems with bulk water supply from CWSA, limited mechanized boreholes[6], small community systems[7] and small town systems[8]. Data were not collected from unprotected sources or household level facilities, such as rainwater harvesting tanks.

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[5] The NLLAP is a WASH sector multi stakeholder platform with the overall goal of improving sector learning and dialogue. It is organised on a monthly basis by the Ghana WASH Resource Centre Network (RCN).

[6] Boreholes with an electrical, diesel or solar powered pump, supplying water to a small piped scheme, typically consisting of 1 or 2 public standpipes, serving up to 1200 people (CWSA, 2010a).

[7] Small piped scheme, typically with 3-4 standpipes, serving 1200 to 2000 people (CWSA, 2010a).

[8] Piped schemes with a mix of household connections and public standpipes, typically serving 2000 to 50.000 people (CWSA, 2010b).

2.2.3 Data collection

Data were collected using survey forms with mostly multiple choice questions. The surveys were tested in Akatsi District by the Triple-S team, in collaboration with regional CWSA and district assembly staff responsible for monitoring water services, using paper-based questionnaires. The feedback from these test runs were used to finalise the survey forms.

A web-based information and communication technology application, called FLOW, was used for monitoring and data collection. A dashboard was used to convert the paper-based surveys for the phone interface. These phone-based questionnaires were further tested in all three Triple-S pilot districts prior to the final survey being subsequently loaded on each of the phones.

Data collection was done using smart phones running on the Android operating system. Submitted surveys stored on the phones were transferred over the local mobile data network or WIFI into the online database.

In order to ensure institutionalisation of the process, and to ensure the data would be available at the level where it could be acted upon, the responsibility for data collection was given to district level staff already responsible for monitoring water services. These included local Environmental Health Assistants and members of the District Water and Sanitation Teams (DWSTs), who were trained in the use of the Android telephones and in administering the survey instruments. The training involved practical and theoretical sessions, including the scoring of indicators, calibration of the Global Positioning System (GPS) devices, and operation of the Android operating system, the touch screen and software keyboard.

The data collection process was supported and supervised by Triple-S's Regional Learning Facilitators (CWSA-hosted Triple-S staff) and regional CWSA monitoring staff in each of the three districts.

In order to collect the data required for the scoring of the different indicators, the following methods were used:

- Review of project documents
- Field inspection and observation of facilities, including stroke and leakage tests (in the case of hand pumps) and photographic recordings of each facility
- Focus group discussions / group interviews with WATSANs and WSDB/ WSDTs
- Inspection of financial and administrative records, where available
- Focus group discussions / group interviews with DWSTs

2.2.4 Quality assurance, analysis and report writing

Data was managed using a web-based dashboard and that allowed near real-time access to data from the field for quality assurance and analysis. Field data was monitored and reviewed from a distance by the Triple-S team in the Netherlands and Ghana, as it came in, especially in the first week of the data collection exercise. This allowed the team to make instant corrections to the data and data collection methods, where needed. In addition, CWSA and district-level staffs were given access to the FLOW interface, which enabled them to monitor incoming data and produce raw data reports.

Data cleaning and initial analysis workshops were held in each of the three study districts. Besides the data collectors and Triple-S staff, DWST and CWSA regional staff participated in this exercise, in order to clean and validate the data. The cleaned data and initial analysis was presented to the Municipal or District Assembly in the three study districts in the beginning of 2012 for verification and feedback. Further, initial

findings and analysis were shared with the CWSA Technical Committee and CWSA partners, who provided feedback to the research team.

Further joint analysis and writing was undertaken by bringing together Triple-S staff, the Regional Learning Facilitators and national level CWSA staff. This process led to the development of three district reports and this synthesis report, covering and synthesizing findings from the three focus districts. Findings from the districts were presented in a series of factsheets[9] and shared at district, regional and national level. Synthesised findings were presented and discussed at different fora at national (e.g. CWSA Technical Committee, stakeholder meeting to discuss study findings, Mole Conference[10]) and international level (e.g. at the Stockholm Water Week, 2012).

2.2.5 Limitations

The limitations of the study include:

- Reliance on perceptions of the service provider on issues of water quality (instead of more scientific physical, chemical or biological tests of water quality). As a result of limited resources to conduct water quality testing, the study relied on water providers to provide subjective assessments of quality based on criteria such as taste and smell.
- Non-availability of financial data and water quantity data from the WSDBs: Data on finances and quantity of water provided and sold from piped systems was unavailable. WSDBs were unable to provide the data required to assess scoring on service level and service provider indicators.
- Absence of data from consumers: Because of time and resource constraints, this study has focused on collecting and analysing service level, service provider and service authority data and therefore did not conduct household surveys to get consumer perspectives of water services.
- Reliance on projected and estimated population data: Data on number of persons depending on a facility was obtained from respondents based on their estimation of the size of population. These figures were not based on head count or population census and therefore it is difficult to vouch for the accuracy of population data used in this study.

[9] See http://www.waterservicesthatlast.org/index.php/Countries/Ghana-Triple-S-initiative/Publications

[10] Annual WASH conference organized by the Coalition of NGOs in the Water and Sanitation Sector (CONIWAS)

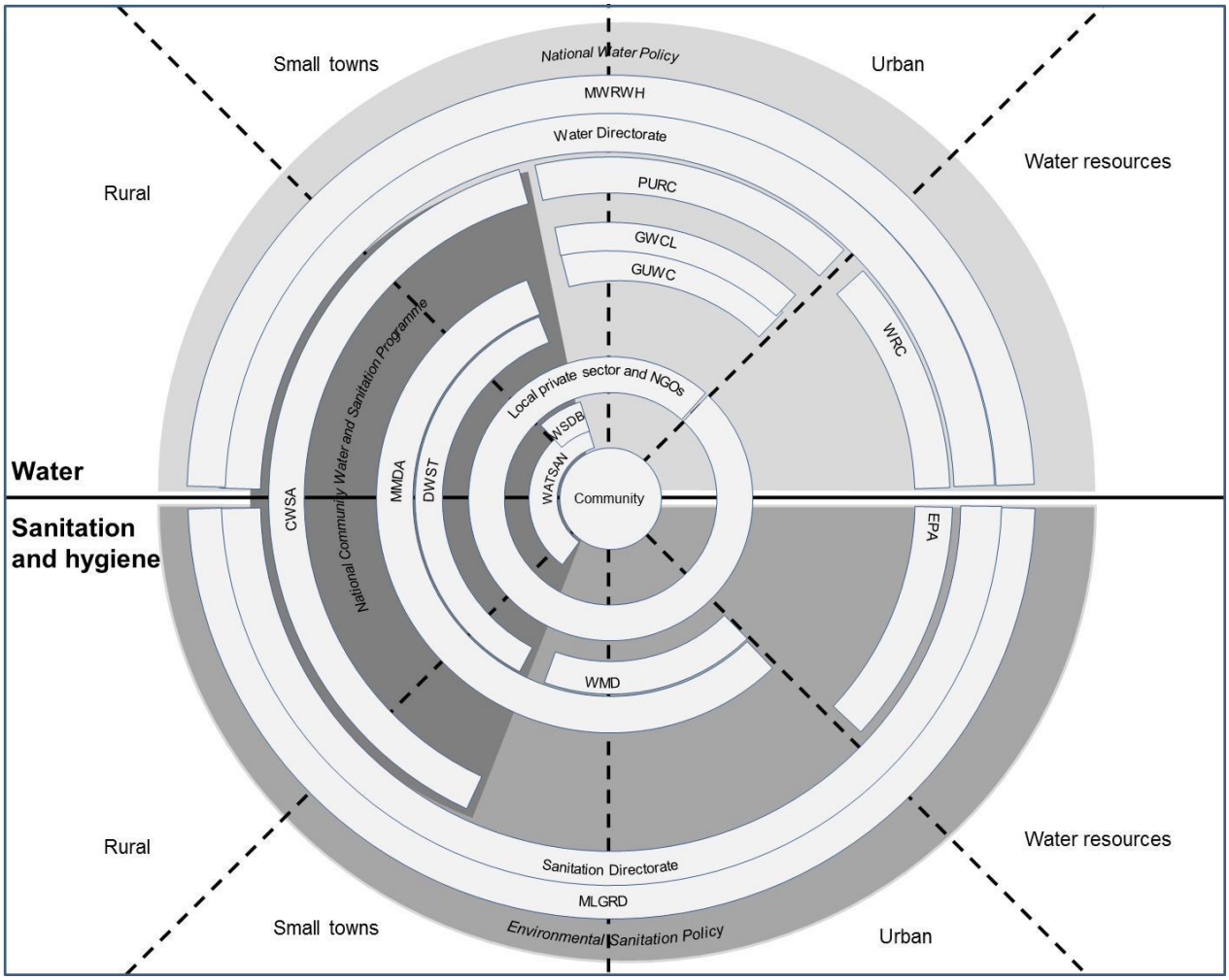
3 Context to the study

This chapter gives an introduction to the context of the study area. It provides an overview of the water supply sector in Ghana in general, and an introduction to the three study districts in particular.

3.1 The water supply sector in Ghana[11]

The water and sanitation sector comprises four distinct areas with different institutional and financial arrangements. These areas are community water and sanitation (in rural areas and small towns); urban water; sanitation; and water resources. An overview of this is given in the figure below.

Figure 2: Overview of the WASH sector in Ghana



Source: adapted from Adank, 2009

Community water and sanitation in rural areas and small towns is the responsibility of CWSA under the Ministry for Water Resources, Works and Housing (MWRWH). Urban water is managed by Ghana Water

[11] This section is largely based on IRC/Agua Consult, 2011.

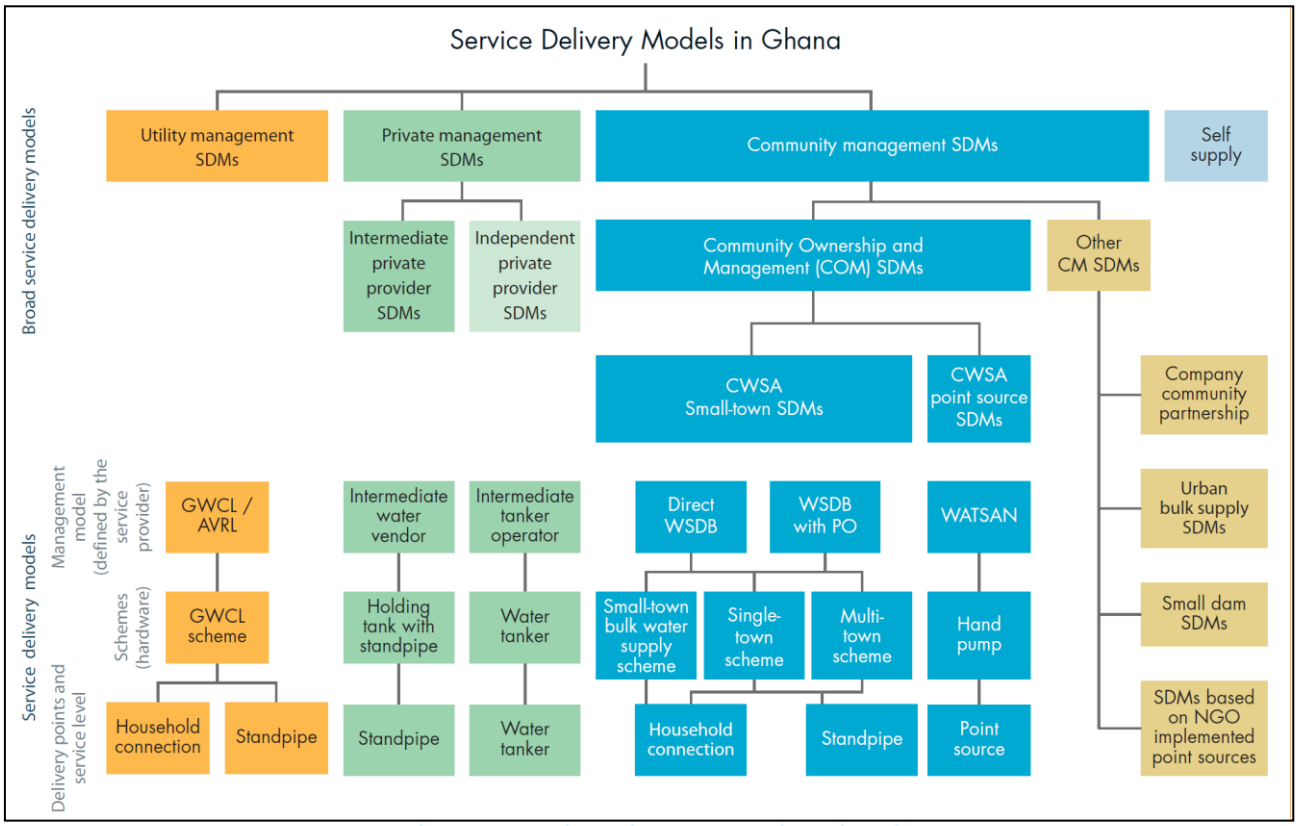
Company Ltd (GWCL), with the Ghana Urban Water Company Ltd (GUWC) as the operator and the Public Utilities Regulatory Commission (PURC) as regulator.

Small town water and sanitation form a bit of a grey area, with management of small towns schemes falling either under the responsibility of GWCL or CWSA. The National Water Policy (NWP) (Government of Ghana, 2007) defines a small town as "a community that is not rural but is a small urban community, with a population between 2,000 and 30,000 that has been mandated by the relevant authority(ies) to manage its own water and sanitation systems". Thus the decision as to whether a small town is 'rural' or 'urban' has essentially become a political decision.

Sanitation falls under the Environmental Health and Sanitation Directorate (EHSD) of the Ministry for Local Government and Rural Development (MLGRD). The MLGRD is also responsible for overseeing local government in the form of Metropolitan, Municipal and District Assemblies (MMDAs). Within the MMDAs, Municipal or District Water and Sanitation Teams are responsible for supporting community-based service providers (WATSAN Committees managing point sources; and Water and Sanitation Development Boards (WSDBs) managing piped schemes). Responsibility for managing and regulating water resources is shared between the Water Resources Commission (WRC), under the MWRWH, and the Environmental Protection Agency (EPA).

Water services are provided under a variety of service delivery models. Figure 3 gives an overview of these service delivery models. As indicated in the figure, there are two principal service delivery models for rural water supply in Ghana. One comprises point sources, e.g. borehole and hand-dug wells fitted with hand-pumps, managed by a voluntary Water and Sanitation (WATSAN) committee. The second model consists of piped water schemes managed by a Water and Sanitation Development Board (WSDB). A variety of sub-models can be identified under this model, which include WSDB-managed mechanised boreholes, WSDB-managed small community piped water supply systems and small town water supply schemes, either directly managed by a WSDB, or by a WSDB with a Private Operator (PO).

Figure 3: Overview of service delivery models in Ghana



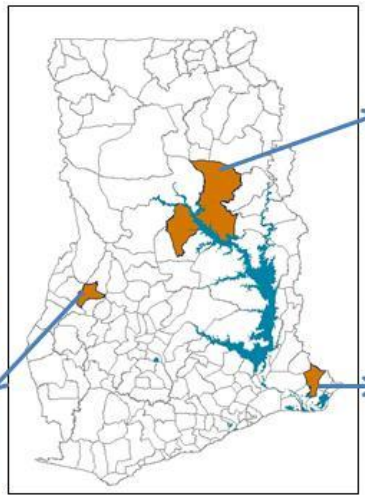
Source: Verdamato et al, 2011

Before presenting the results of the baseline assessment of service and performance levels under the different service delivery models identified, the three study districts are profiled below.

3.2 Introduction to the study districts

This study was undertaken in the three Triple-S focus districts: Akatsi (Volta Region), East Gonja (Northern Region) and Sunyani-West (Brong Ahafo Region). Figure 4 shows the locations of these districts. More detailed maps of each of the districts can be found in Appendices 3.1 to 3.3.

Figure 4: Overview of the study districts



East Gonja District, Northern region	
Area (km²):	9,015
Population:	135,450*
Water supply coverage:	47% **
Number of area councils:	6
Number of point sources:	122
Number of piped schemes:	8

Sunyani West District , Brong Ahafo region	
Area (km²):	1, 658
Population:	85,272*
Water supply coverage:	56% **
Number of area councils:	7
Number of point sources:	103
Number of piped schemes:	19

Akatsi District , Volta region	
Area (km²):	906
Population:	128,461*
Water supply coverage:	62% **
Number of area councils:	5
Number of point sources:	249
Number of piped schemes:	6

* = 2010 population and housing census data (GSS, 2012)
** = CWSA coverage data 2011

Akatsi District is one of the 18 administrative districts in the Volta Region. The district is the smallest of the three study districts but, with 142 people per km^2, it has the highest population density (against a population density of 51 in Sunyani West and only 15 people per km^2 in East Gonja).

East Gonja District is one of the 20 districts of the Northern Region and is located at the south-eastern section of the Northern Region, with Salaga as its capital. With an area of about 9,000 km, it is one of the largest districts in the country. The population of East Gonja is predominantly rural, with agriculture employing over 80% of the population. Crops cultivated are mostly cereals and tubers.

Sunyani West District is one of the 22 districts of the Brong Ahafo Region. It is one of the relatively new districts, created in 2008, with Odumase as its capital. Sunyani West is the most urbanized of the three study districts, with 71% of people living in settlements with over 5,000 people (classified as urban in Ghana). In Akatsi and East Gonja, the equivalent urban proportions are 25% and 19% respectively.

According to CWSA data for 2011, Akatsi has with 61% the highest rural water coverage of the three study districts, followed by East Gonja district, with a coverage of 47% at the end of 2011 (CWSA-NR, 2011). The 2011 rural water coverage in Sunyani West District was only 41% (SWDA, 2010), which is lower than the Brong Ahafo regional coverage of 56% and the average national coverage of 63%. The District Monitoring and Evaluation System (DiMES) mentioned in Chapter 1 has been implemented in all districts of the Volta Region, including Akatsi District. In the Northern Region, CWSA has – with support from United Nations Children's Fund (UNICEF) – implemented the DiMES in 10 out of the 20 districts, including the study district East Gonja. So far, computers have been provided to each of the ten districts, with the appropriate software installed, and training provided to relevant district staff. However, very few districts have been able to populate the database largely due to lack of funds for districts to gather information from facilities. The DiMES is yet to be rolled out in the districts in the Brong Ahafo Region.

4 Results: the state of water service provision

This chapter presents the state of water service provision in the three study districts, based on the analysis of the baseline data collected. For point sources as well as piped schemes in the three districts, functionality, service level sub-indicators (reliability, quality, quantity and accessibility, in terms of distance and crowding) and the overall level of service provided by the facilities are analysed and discussed. More detailed results, presented in the form of tables, graphs, and other figures, can be found in the separate Appendix[12].

In Akatsi District, a total of 249 point sources and six piped schemes (supplying water service through 455 household connections and 83 public standpipes) were identified and mapped. In East Gonja, 122 point sources and eight piped schemes (with 560 household connections and 57 public standpipes) were identified. For Sunyani West, there were 103 point sources and 19 piped schemes (with 115 public standpipes). Akatsi District, being the smallest of the three districts, with the largest number of water facilities, thus has the highest water supply coverage.

4.1 Point sources

The point sources in the three study districts have been installed under a variety of projects, with financial support from an array of financiers and donors. For the most part, point sources in Akatsi District have been installed with financing from bi-lateral donors (e.g. DANIDA) and NGOs (mainly Lifetime Wells). In East Gonja, multilateral donors (e.g. UNICEF) and bi-lateral donors (mainly European Union and AFD) have been the main financiers, in addition to Government of Ghana, which was the main financier of point sources in Sunyani-West as well. In addition, a range of faith-based organisations, NGOs and CBOs have financed point sources on a small scale in each of the three districts (for details, see Appendix 4.1.1).

The majority of point sources in the three study districts are hand pumps installed on boreholes. Relatively fewer hand-dug wells have hand pumps installed on them. The dominant types of hand pump found in the three districts are the Ghana-modified India Mark II and the Afridev pumps. In addition, some Nira AF-85s were found, mostly installed on hand-dug wells (for details, see Appendix 4.1.2).

In the period 2000-2011, the focus has been on Afridev hand-pumps. The majority of Ghana modified India Mark II pumps were implemented earlier, during the 1990. Most of point sources found in the three districts were installed in the 2000s (for details, see Appendix 4.1.3).

4.1.1 Functionality

As shown in red in Figure 5, about a third of the point sources in the three study districts were classified as broken down or non-functioning. This proportion is in line with the findings from other studies mentioned in chapter 1. The percentage of point sources that did pass both the stroke and leakage test, and can therefore be considered fully functional, was found to be highest in East Gonja (42%) and lowest in Akatsi (19%).

Breakdown of hand pumps was mentioned as the most common cause of point source failure. In East Gonja, low water tables were considered to be responsible for about a quarter of broken down and non-

[12] See http://www.waterservicesthatlast.org/index.php/content/download/1955/12102/file/Synthesis%20Appendix_final.pdf

functioning point sources, while this was the case in only 2% and 8% of broken down and non-functioning point sources in Akatsi and Sunyani West respectively (see Appendix 4.1.12).

As would be expected, the proportion of non-functional and broken down point sources is higher for the older point sources than for the ones that have been implemented more recently, as illustrated in Figure 6. The figure also shows that just two years after implementation, 10% of point sources have already broken down and 7% are not passing the stroke and leakage test.

Of the three types of hand pumps, the functionality rate of the Afridev seems highest (37% of Afridev pumps passing both stroke and leakage test, against 31% and only 15 % for Nira and Ghana Modified India Mark II respectively). However, it is important to note that most of these Afridev hand pumps have been implemented in the last 10 to 12 years, while the majority of the less well functioning Ghana India Mark II hand pumps were implemented in the 1990, as mentioned above.

Figure 5: Point source functionality per district

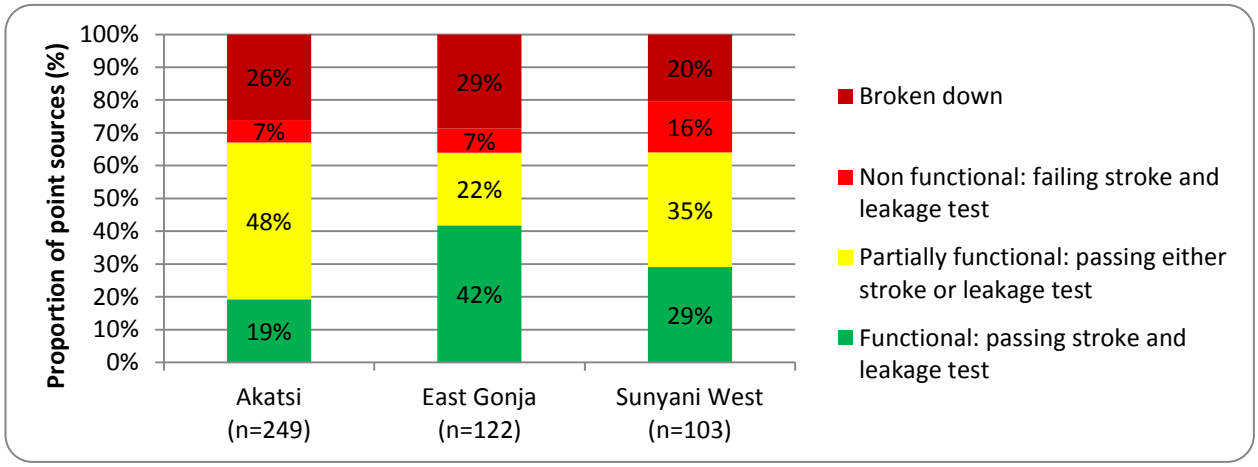
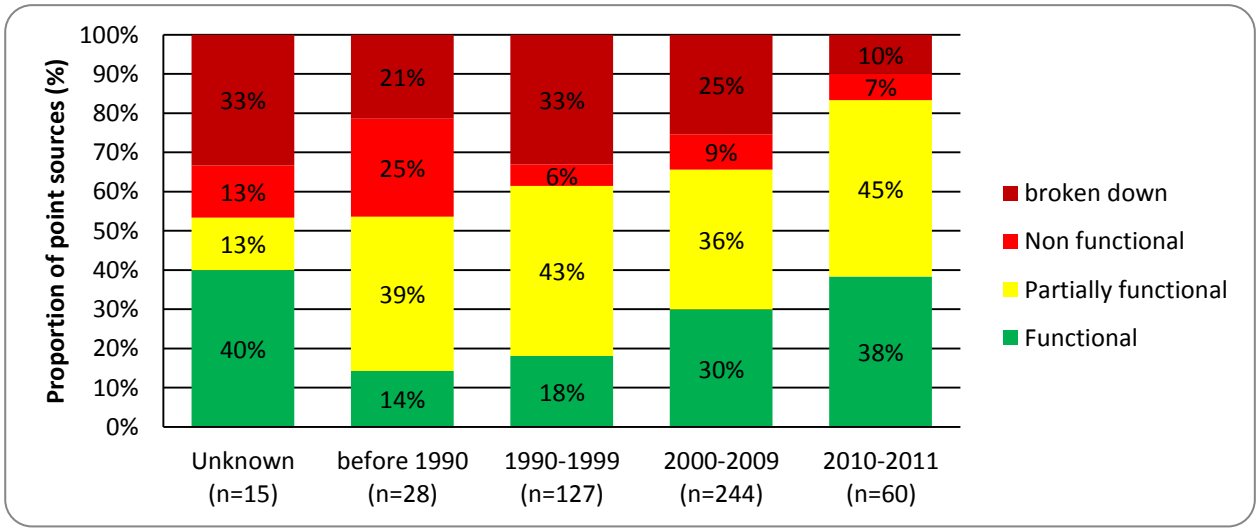


Figure 6: Functionality and year of construction of point sources



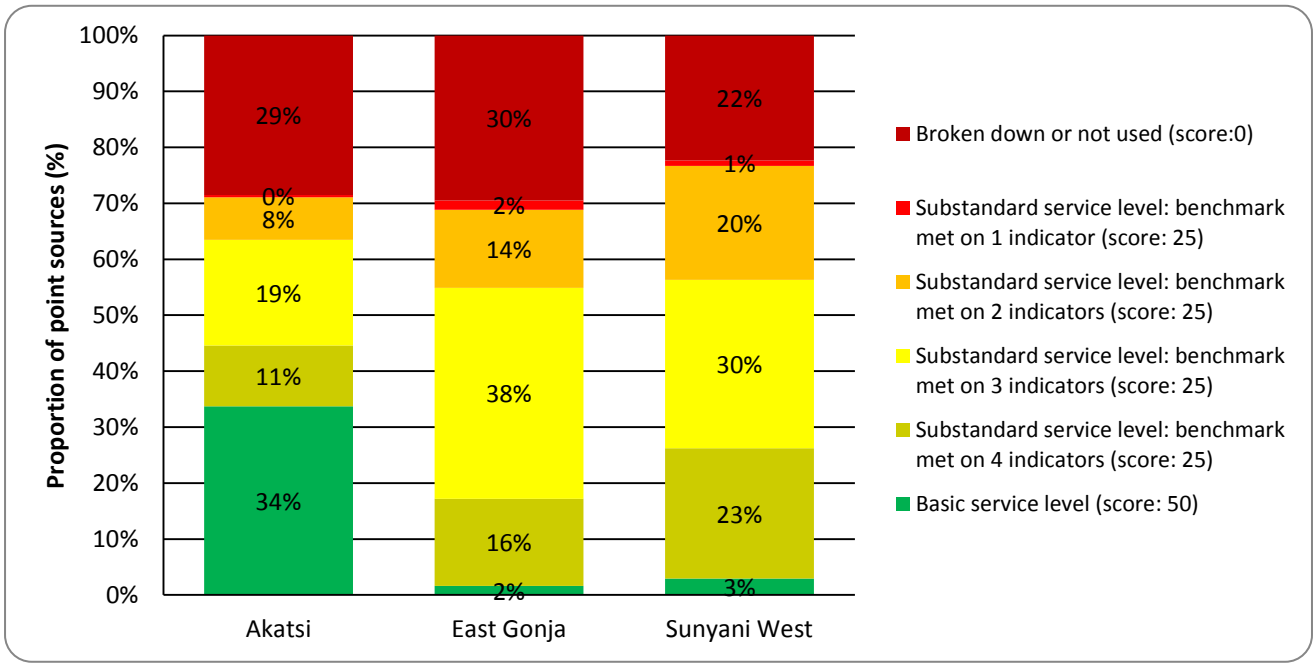
So summing up, when functionality of point sources is defined by whether or not the point source passes both a stroke as well as a leakage test, functionality rates are shockingly low, ranging from 42% in East Gonja to only 19% in Akatsi District. If point sources that pass at least one of the two tests are also

presumed to be functional (which in practice will often mean that it takes more than 40 strokes to fill a bucket), under two-third of the facilities would be considered functional in the three districts, which means a non-functionality rate of about one third. With increasing age of the facilities, functionality levels seem to drop.

4.1.2 Service level and service level sub-indicators

For each of the point sources in the three study districts the reliability, degree of crowding, distance, water quality and quantity of water used has been assessed against the acceptable standards and norms set by CWSA. As presented in chapter 2, the assessment of service levels depends on whether or not point sources meet the benchmarks on these different service level sub-indicators. The graph below (Figure 7) gives a visual overview of the performance of point sources, in terms of service level scores, in the three study districts. For those point sources providing a sub-standard level of service, the graph indicates the proportion meeting various levels on the sub-indicator benchmarks.

Figure 7: Service levels



As shown in Figure 7, only about a third of point sources in Akatsi District provide a basic service, as per the standards set by CWSA, while in East Gonja and Sunyani West hardly any of the point sources provide a basic level of service. This was to a large extent due to the low proportion of point sources meeting the non-crowding indicator (in East Gonja) and the distance indicator (in Sunyani West).

Table 5 presents an overview of the proportion of point sources in each study district that meet the benchmark on the different service level sub-indicators.

In respect of crowding and distance to water points, the table shows big differences between the three study districts, with Akatsi having the highest percentage of point sources which meet the benchmarks on these sub-indicators. East Gonja has the lowest percentage of non-crowded point sources, while Sunyani West has the lowest percentage of point sources which are within 500 metres of the entire population serviced by the point source.

Table 5: Percentage of point sources meeting the benchmark on the service level sub-indicators

	Akatsi (n=249)	East Gonja (n=122)	Sunyani West (n=103)	Grand Total
Reliability: functioning for at least 95% of the year	69%	59%	64%	66%
Non-crowded: less than 300 people per borehole, or 150 people per hand-dug well	72%	9%	54%	52%
Distance: entire population within 500 metres of the point source	83%	60%	34%	66%
Quality: perceived as acceptable by users	94%	92%	87%	92%
Quantity: estimated amount used is at least 20 lpcd	51%	61%	58%	55%

Crowding of point sources in East Gonja was caused by the high number of people depending on improved point source, which was estimated to amount to 786 people per point source in East Gonja, against 443 people in Sunyani West and 357 people per point source in Akatsi. The percentage of point sources meeting the non-crowding benchmark was lower for Nira hand pumps (which is the standardised hand pump recommended by the CWSA for shallow wells, often hand-dug wells, with a recommended maximum number of 150 users) than for Afridev and Ghana-modified India Mark II hand pumps (see Appendix 4.1.13), implying that Nira hand-pumps are more likely to be crowded.

The relatively low percentage of point sources meeting the *distance* benchmark in Sunyani West could be caused by the distribution pattern of point sources, which is much more concentrated in certain areas (mainly along roads) than in the other two districts (see Appendix 3.1 to 3.3).

For more than half of the *unreliable* point sources, problems with raising funds were considered a major reason for the unreliability. In East Gonja, a low water table was considered a reason for unreliability in a bigger proportion of the point source sample (14%) than in the other two districts (3% and 0% in Akatsi and Sunyani West respectively). Problems with acquiring the services of an area mechanic were considered to contribute more to unreliability of point sources in Sunyani West and East Gonja (where this was given as a main reason for unreliability for 14% of unreliable point sources), than in Akatsi District (4% of unreliable point sources). See Appendix 4.1.12 for an overview and more details on reasons for unreliability.

For the majority of point sources in the three study districts, water users perceived the *quality* of the water from hand pumps to be acceptable. As noted in Section 2.2.5, the assessment of water quality was based entirely on users' subjective impressions rather than on scientific methods. *Quantity* of water use, on the other hand, was reported to reach or exceed 20 litres per capita per day for just over half of the point sources. As this is based on estimates from the WATSAN committees, rather than on household surveys or measurements and observations, the accuracy of this estimate can be questioned. It is likely that in reality, water use from point sources, and therefore the proportion of point sources meeting the benchmark on the quantity indicator, is even lower.

Water from point sources is not only used for drinking water purposes, but also for watering gardens, animals and for small industrial uses. Table 6 presents the proportion of point sources used for purposes beyond domestic use. The extent of these uses was however not assessed during this study.

Table 6: Percentage of point sources with water uses beyond domestic use

Type of use	Akatsi	East Gonja	Sunyani West	Grand Total
Watering gardens	29%	5%	25%	22%
Livestock	79%	48%	21%	58%
Small commercial uses (brick making, pito[13] making etc)	74%	61%	45%	64%

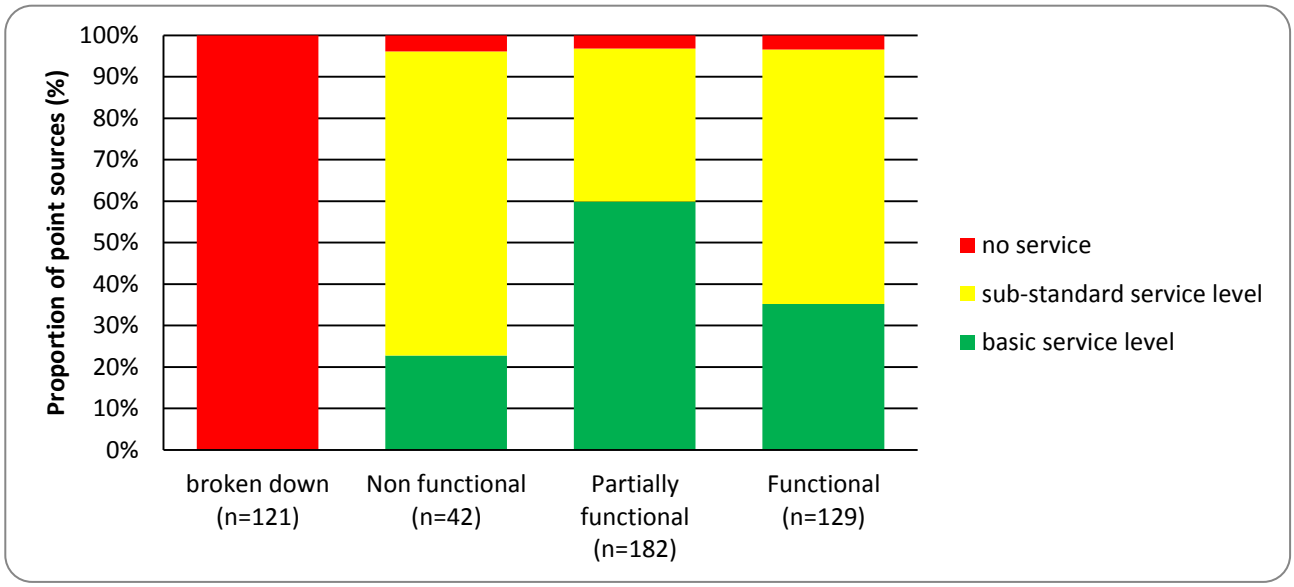
The percentage of point sources used for multiple uses was higher for the reliable point sources than for the unreliable ones. Some 30%, 68% and 73% of reliable point sources were used for watering gardens, livestock and small commercial uses respectively, against 6%, 41% and 48% of unreliable sources. This can mean that more reliable point sources are more likely to be used for purposes beyond domestic use, or that point sources used for uses beyond domestic use are better maintained and thus provide more reliable services.

With the highest percentage of point sources providing a basic service level, the average service level score in Akatsi was 26, which was higher than the average service level scores in East Gonja (18) and Sunyani West (20).

4.1.3 Service level and functionality

As illustrated in Figure 8, the correlation between service level and functionality was not found to be very strong. The percentage of point sources providing a basic level service is higher for partially functioning point sources than for fully functioning point sources. This could be explained by examining how fully and partially functioning point sources score on the different service level sub-indicators.

Figure 8: Point source functionality and service level

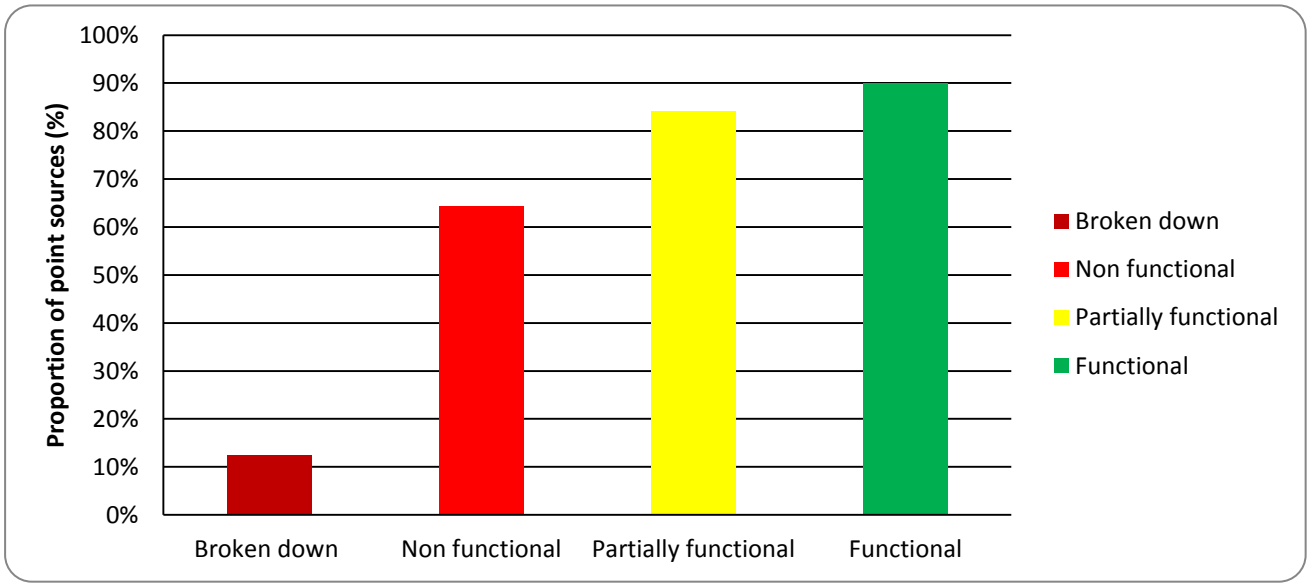


[13] Pito is a traditional beer typically brewed from millet in the northern savannah.

As shown in Figure 9, there is a correlation between the functionality, assessed at a certain point in time, and reliability of the facilities, determined by the number of days the facility is not functioning over the period of one year. The difference in the percentages of reliable point sources between partially functioning and fully functioning facilities is however small and not statistically significant (with a confidence level of 90%).

Although it seems logical that water use from fully functional point sources would be higher than that for partially functional point sources, the percentage of point sources with a use of at least 20 lpcd was actually found to be smaller for fully functioning point sources than for partially functioning point sources. This could be explained by looking at the correlation between water use, crowding and functionality. The percentage of point sources with water use of at least 20 lpcd was found to be higher for non-crowded point sources than for crowded point sources. Less crowding thus means more water use. However, the percentage of non-crowded point sources was higher for partially functioning point sources (passing either the stroke or the leakage test) than for fully functioning point sources (passing both tests). Fully functioning point sources are thus more likely to be crowded and have smaller quantities of water use than partially functioning point sources (see Appendix 7.1 for more details on the correlations between functionality and the service level sub-indicators).

Figure 9: Reliability and functionality of point sources



4.2 Piped systems

A variety of piped schemes exist in the three study districts, differing in size and complexity.

Each of the three study districts has one *small-town piped scheme*. Small-town piped schemes commonly serve a population of 5000 - 50,000 people through a combination of household connections and standpipes. The small-town piped scheme in Akatsi (Akatsi town) and East Gonja (Salaga town) serve about 30,600 and 26,000 people respectively. The one in Sunyani West (Nsoatre town) serves a population of about 9,000 people though standpipes only. That in Salaga, East Gonja, was originally constructed in 1967, with financial support from UNICEF and World Bank and was rehabilitated in 1997, with financial support from the World Bank. The small town system in Akatsi was constructed in 2000, financed by GTZ/KFW

under the EVORAP Project. The construction of the small-town system in Nsoatre, Sunyani West, was financed by the Government of Ghana and finalized in 2008.

In addition, five *small community piped schemes* were identified in Akatsi district, each of which serves between 826 and 4000 people, with an average of 1,798 people. The focus of these types of schemes is on service provision through standpipes, though in four out of five schemes in Akatsi, a number of household connections were found as well.

East Gonja and Sunyani West are also served by three and 14 *limited mechanized boreholes* respectively, implemented relatively recently (between 2003 and 2011). These boreholes, with mains or diesel-powered pumps, connect to between one and four standpipes, each serving between 150 and 3,000 rural users, with an average of 1,534 in East Gonja and 722 people in Sunyani West.

In East Gonja, four rural communities under Kpariba Area Council are served by standpipes *connected to* the GWCL-managed Dalun system: Dabogshie (3 standpipes), Wulanyili (1 standpipe), Dashie (3 standpipes) and Kpandu (3 standpipes). These systems were implemented in 2011, financed under the Unicef-funded i-WASH programme. The Dalun system also serves Tamale and a variety of other small towns outside East Gonja District, including the small town, Savelugu.

In Sunyani West, four clusters of GWCL-managed standpipes were found, serving the mostly peri-urban communities of Chiraa (18 standpipes), Odumase (21 standpipes), Fiapre (17 standpipes) and Dumasua (3 standpipes). These standpipes are connected to the utility-managed Abesim scheme, which also supplies water to Sunyani Municipality and other towns in the area. This scheme, which is located in a neighbouring district, was constructed in 1962, financed by the Government of Ghana, and rehabilitated in 1997.

An overview of the systems is presented in Table 7. A more complete overview, including number of standpipes and household connections, can be found in the Annex.

Table 7: Number of piped systems in the study districts

District	Akatsi	East Gonja	Sunyani West
Small town piped system	1	1	1
Small community piped system	5		
Limited mechanised borehole		3	14
Clusters of standpipes connected to GWCL		4	4
Total number of schemes	6	8	19
Total number of schemes with household connections	5	1	0
Total number of household connections	455	560	0
Total number of standpipes	83	57	115
Total number of standpipe taps	157	128	142
Total potential population served (300 per tap, 10 per household connection)	49,375	41,200	46,500
Estimated population served	39,608	34,668	44,020

4.2.1 Functionality

All standpipes connected to the GWCL scheme were found to be functional. Of the 14 mechanized boreholes in Sunyani West, two were found to be non-functional. Also one of the three mechanized boreholes in East Gonja was found to be non-functional while another was found to be only partially functional.

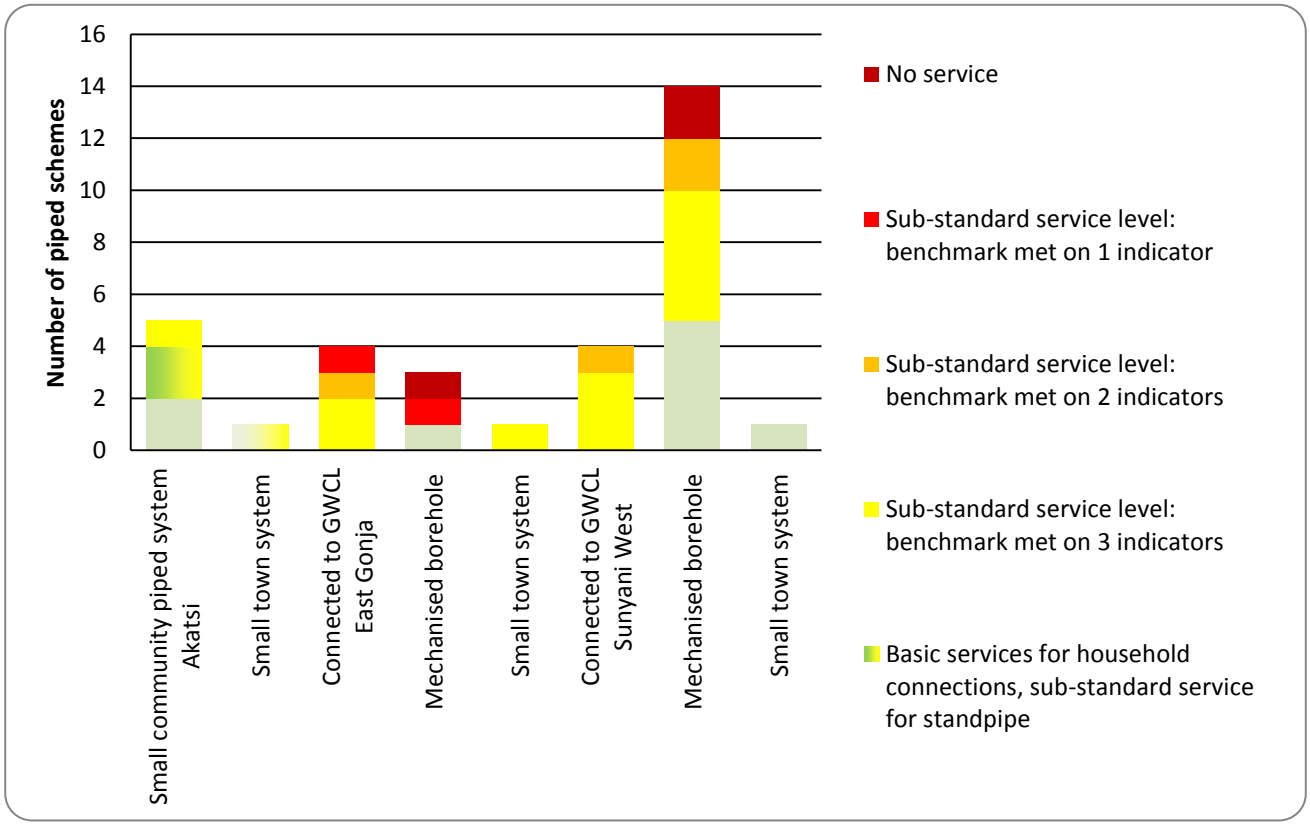
Practically all of standpipes connected to the small town or small community piped schemes were functional, with the exception of the Salaga small town scheme in East Gonja, where only 10% of standpipes of were considered functional. 98% of standpipes in the Akatsi small town scheme and all those in Nsoatre (in Sunyani West) were functional. Of the Dagbamete small community scheme in Akatsi District, 86% of standpipes were found to be functional. The other four small community schemes in Akatsi District were all fully functional.

In total, the functionality of standpipes was 98% for Akatsi, 33% for East Gonja and 97% for Sunyani West. In Akatsi and Sunyani West, the functionality rate of standpipes connected to piped schemes was thus much higher than that of point sources while, in East Gonja, the unstable small town scheme resulted in a low functionality rate of standpipes connected to piped schemes in the district.

4.2.2 Service level and service level indicators

As piped schemes can provide different levels of services, e.g. basic levels through public standpipes and high levels through household connections, determining the level of service provided is more complex than for point sources. Figure 10 gives an overview of different types of schemes in the three districts and the level of service that they provide.

Figure 10: Piped scheme service levels per district, by type of scheme



As shown in the graphs, the number of schemes providing and percentage of people receiving basic level services is very low. In addition, the graphs show that a lack of quantity data makes it difficult to give a good assessment of the level of service provided and accessed. Below, we take a closer look at the reasons behind these low scores by examining the scores on the different service level sub-indicators.

In all piped schemes in the three study districts, water quality was perceived as acceptable.

Standpipes connected to GWCL schemes:

All 8 clusters of standpipes connected to the GWCL network were providing sub-standard services, as none of these standpipes were considered to provide reliable services. A reason for this could be the pressure on the Dalun and Abesim supply schemes, which provide water services to a variety of cities, towns and communities. Due to this, water supply tends to be rationed and rotated among different supply areas, resulting in interruption of services for more than 18 days a year (95%). In addition, in the case of two clusters, only part of the population was within 500 m of the standpipe. For GWCL standpipes in Sunyani West for which water use data was available, to the quantity accessed amounts to 3 to 4 lpcd, which is far below the basic service standard of 20 lpcd.

Mechanised boreholes:

Of the 17 mechanised boreholes, 8 were considered reliable, non-crowded and within a distance of 500m of the entire user population. However, the amount of water used from these schemes could not be determined because of lack of data. Therefore, these schemes provide a *potentially* basic level of service. Three mechanised boreholes were not providing services at all. The remaining six were providing sub-standard services, as they were unreliable, crowded and/or not within 500 m of the entire population.

Small community schemes:

Four out of five small community schemes in Akatsi District provided reliable water services through accessible standpipes (no crowding and within an acceptable distance). The service provided by the Lume Avete scheme was considered unreliable. However, only in three small community piped schemes in Akatsi District were household connections metered and consumption data kept. Average sales from household connections were found to exceed the basic water use level of 20 lpcd in only two schemes (Ave Dakpa, where average water use was 30 lpcd, and Avenorpedo, where it was 24 lpcd). In Lume Avete, average water use was 16 lpcd. Water use from standpipes in these schemes was below 20 lpcd (5 lpcd, 17 lpcd and 3 lpcd in Ave Dakpa, Avenorpedo and Lume Avete respectively). The schemes of Ave Dakpa and Avenorpedo are therefore considered to provide basic services to people with access to household connections and sub-standard services to people with access to standpipes, while the Lume Avete is providing sub-standard services to all its users. The remaining two small community schemes for which quantity data was not available are assessed as providing a potentially basic level of service to all its users.

Small town schemes:

The Salaga small town scheme provided a sub-standard service as it was considered unreliable. The Akatsi small town scheme provided sub-standard services to the section of the population who depend on standpipes, as the average number of users per standpipe is estimated to exceed the threshold of 300. The population depending on household connections were potentially provided with at least a basic level of service. However, data on water quantity used from household connections was not available. The Nsoatre small town scheme also provided reliable and accessible services through standpipes, but did not have data available on the quantity of water used. Therefore, it is assessed as providing a potentially basic level of service.

Service level sub-indicator scores per district:

Table 8 gives an overview of the proportion of piped schemes meeting the benchmarks on the service level sub-indicators. As shown in Table 8, sub-standard service levels in Akatsi were mostly caused by the failure of the schemes to meet the basic quantity criterion of 20 lpcd. Many piped schemes in East Gonja struggled

with reliability. This was to a large extent due to the fact that the small town scheme and the standpipes connected to the GWCL scheme in East Gonja, which constituted half of the piped schemes in the district, were unreliable.

Lack of water quantity data was a challenge for scoring the quantity sub-indicator. However, for the schemes for which data was available, water use from standpipes was found to be far below the basic level of 20 lpcd (17 litres per capita per day in the small community scheme of Avenorpedo in Akatsi, to as little as 3 to 5 litres per capita per day in two small community water schemes in Akatsi and in two clusters of standpipes connected to the GWCL scheme in Sunyani West). Average water use from household connections was higher than from standpipes. In two out of the three cases for which data was available, the amount of water used exceeded the standpipe benchmark of 20 lpcd, but did not reach the high level of 60 lpcd, which is the design standard for household connections.

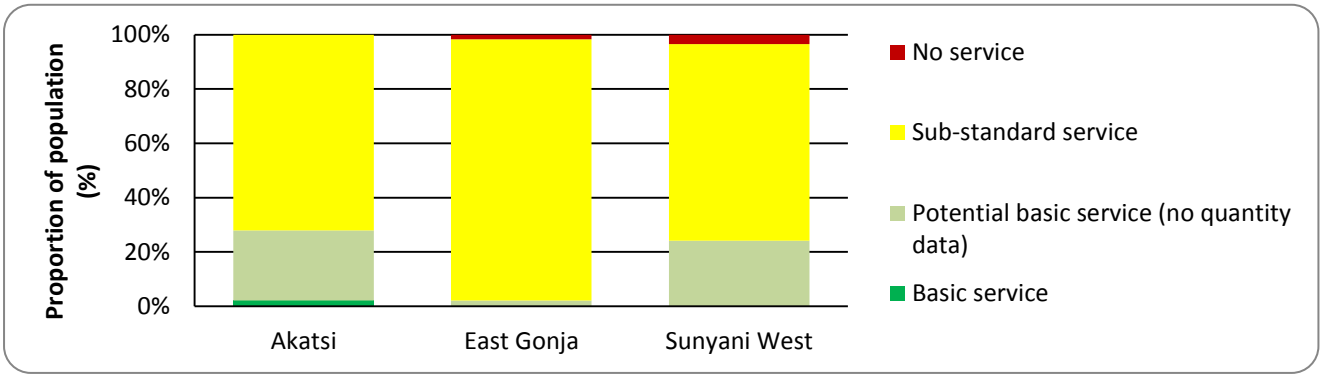
Table 8: Piped schemes meeting the benchmark on the service level sub-indicators

		Akatsi (n=6)	East Gonja (n=8)	Sunyani West (n=19)	Total
Reliable: piped scheme was functioning for 95% of the year or more		5 (83%)	2 (25%)	12 (63%)	19 (58%)
Non-crowded: less than 300 people per standpipe		5 (83%)	6 (75%)	13 (68%)	24 (73%)
Distance: entire population is within 500 metre of the point source		6 (100%)	4 (50%)	17 (89%)	27 (82%)
Quality: perceived as acceptable by users		6 (100%)	8 (100%)	19 (100%)	100%
Standpipe quantity	Quantity data available	3 (50%)	0 (0%)	1 (5%)	4 (12%)
	Average use is at least 20 lpcd	0 (0%)	No data	0 (0%)	0 (0%)
Household connection quantity	Quantity data available	3 (60% of 5 schemes with HCs)	0 (0% of 1 scheme with HCs)	Not applicable	3 (50% of 6 schemes with household connections)
	Average use is at least 20 lpcd	2 (40% of 5 schemes with HCs)	No data	Not applicable	2 (33% of 6 schemes with household connections)

Service levels:

Unlike point sources, piped schemes vary significantly in size and number of people served. Figure 11 presents an analysis of the population depending on piped schemes with access to different levels of service. It shows a low percentage of people who are not provided with services. This is due to the high level of functionality, especially in the larger schemes serving bigger populations. It also shows a very low percentage of people receiving basic services and a relatively high percentage (20% of the total population in the three districts) who are potentially provided with a basic level of service, depending on whether or not they use at least 20 litres per capita per day (on which data was not available).

Figure 11: Piped scheme population per service level per district



4.3 Summing up

Not all people in the three study districts have access to improved water services. Based on the findings, an estimated 30% of the population in the three districts is covered by piped water services, while an additional 40% can potentially be covered by the identified point sources (based on their maximum capacity), leaving a total of 30% of the population uncovered.

However, as shown above, not all facilities were functioning as they should be. About a third of the point sources in the three districts were found to have broken down or to be functioning sub-optimally. Functionality rates were higher for the piped systems than for point sources in the three study districts.

Even for those which were fully functional, the majority of facilities were not providing a basic level of service, as per the CWSA standards on reliability, crowding, distance, water quality and quantity. A very large part of point sources in the three study districts provided no or sub-standard services. Only in Akatsi did about a third of the point sources meet the benchmark on all five service level sub-indicators, which indicates a basic service level.

On *reliability, quality and quantity*, the point sources in the three districts scored more or less the same. Reliability was especially an issue for the standpipes connected to the GWCL scheme, and to a lesser extent for the limited mechanised boreholes and point sources. Water *quality* was generally perceived as acceptable.

Crowding of point sources was found to be a big issue in East Gonja, where the ratio between number of people depending on point sources and number of point sources is considerably higher than in the other two districts. *Distance* between point sources and users was a challenge mainly in Sunyani West.

For slightly under one-half of the point sources in the three districts, the *quantity* of water used was less than 20 litres per capita per day, which is below the benchmark for quantity. Equivalent data was hardly available for piped schemes. Of the three piped water schemes that did have records for water sales, two were found to deliver far below the benchmark of 20 litres per capita per day for standpipes, and over 20 litres per capita per day for household connections.

There is no clear correlation between the five service level sub-indicators on the one hand and functionality on the other. Thus, no clear correlation can be established between service level and functionality.

5 Results: Performance of service providers

The performance of community-based water service providers (WATSANs and WSDBs)[14] has been assessed in the three study districts against a set of indicators, based on CWSA guidelines, which give guidance to the structures and processes that have to be in place, and which are considered essential for the delivery of sustainable water services. This chapter presents the results of this assessment in the three study districts. More detailed results, presented in the form of tables, graphs and other visuals, can be found in a separate Appendix[15].

5.1 Point source service providers

As shown in Table 9, which gives overview of the point sources and WATSANs in the three study districts, about half of the point sources in Sunyani West are not managed by a WATSAN committee. The same is true for about a third of point sources in Akatsi District. Typically, point sources installed by churches and NGOs (such as Lifetime Wells in Akatsi District) (see Box 1) or through private initiatives are not managed by a WATSAN (e.g. 60% of point sources implemented by NGOs were found not to have a WATSAN in place). In East Gonja, WATSANs have been formed to manage and maintain the majority of point sources (98%). In many cases, especially in East Gonja, a single WATSAN manages multiple point sources. In Akatsi, five point sources in two communities were managed by WSDBs, whose primary role is the management of piped systems in these communities. In addition to the WATSANs, a number of instances were found in East Gonja (3) and Sunyani West (18) where the point sources were not managed by a WATSAN, but where a caretaker was available to maintain the facility.

Table 9: Number of point sources and WATSANs in the three districts

	Akatsi	East Gonja	Sunyani West
Number of point sources	249	122	103
Point sources managed by WATSANs or WSDBs	169	119	50
Proportion of point sources managed by WATSANs	68%	98%	49%
Number of communities with point sources	180	53	59
Number of communities with one or multiple WATSANs or WSDBs managing point sources	111	47	24
Proportion of point source communities with WATSANs	62%	89%	41%
Number of WATSANs	109	51[16]	28[17]

[14] According to the CWSA Regulations Legislative Instrument, WATSANs and WSDBs are, collectively, now referred to as "Water and Sanitation Management Teams" or WSMTs

[15] See http://www.waterservicesthatlast.org/index.php/content/download/1955/12102/file/Synthesis%20Appendix_final.pdf

[16] One WATSAN per community, except for Kpembe (two WATSANs) and Salaga (four WATSANs)

[17] One WATSAN per community, except for Asnakwaa (two WATSANs), Chiraa (three) and Kwatire (two)

In the rest of this section, an assessment is presented of the performance of WATSANs in the three districts against indicators related to governance, operations and financial management.

Box 1: Point sources without WATSANs in Akatsi District

In Akatsi District, the NGO Lifetime Wells financed the construction of a number of point sources. By signing an MOU with Lifetime Wells, the District Assembly agreed to undertake the necessary software activities, including the establishment and training of well-functioning WATSAN Committees to operate and maintain the point sources. However, these WATSAN Committees have never been established, which accounts (at least partially) for the large number of point sources in Akatsi District without WATSAN Committees.

5.1.1 Benchmarking overview

The performance of the WATSANs was scored against 11 service provider indicators: three governance indicators, five operational indicators and three financial management indicators. Each indicator is scored on a scale from 0 to 100, with an average district-level score determined for the indicator. For each indicator, a benchmark was set, representing the minimum acceptable score on that indicator. Table 10 shows for each indicator the proportion of WATSANs who met the specified benchmark in each of the three study districts. The Annex gives a complete overview of the scoring tables for each of the indicators.

Table 10: Percentage of WATSANs that met the benchmark

Indicator group	Indicator	Akatsi (n=109)	East Gonja (n=51)	Sunyani West (n=28)	Total
Governance indicators	Composition of WATSAN in line with CWSA guidelines	53%	31%	22%	43%
	Adequate record keeping and accountability to community	41%	51%	43%	44%
	No political or chieftaincy influence in the composition of the WATSAN	100%	100%	96%	99%
Operational indicators	Availability of spare parts	45%	46%	27%	43%
	Availability of area mechanics	60%	65%	43%	58%
	Corrective maintenance	32%	65%	25%	35%
	Periodic maintenance	76%	82%	46%	74%
	Routine water quality sampling and analysis	0%	65%	28%	20%
Financial management indicators	Positive revenue and expenditure balance	59%	63%	25%	55%
	Adequate financial management, accounting and auditing	38%	20%	7%	28%
	Tariff setting based on projected costs	5%	26%	32%	15%

Table 10 shows that significant proportions of the WATSANs in the three districts did not meet the benchmark on seven out of the 11 indicators. In Sunyani West, WATSANs failed to meet the benchmarks on

as many as 10 of the 11 indicators while in East Gonja and Akatsi, they failed on four and six indicators respectively.

Below, we assess in further detail each indicator group.

5.1.2 Governance indicators

WATSAN governance indicators:

- Composition of WATSAN in line with CWSA guidelines
- Adequate record keeping and accountability to community
- No political or chieftaincy influence in the composition of the WATSAN

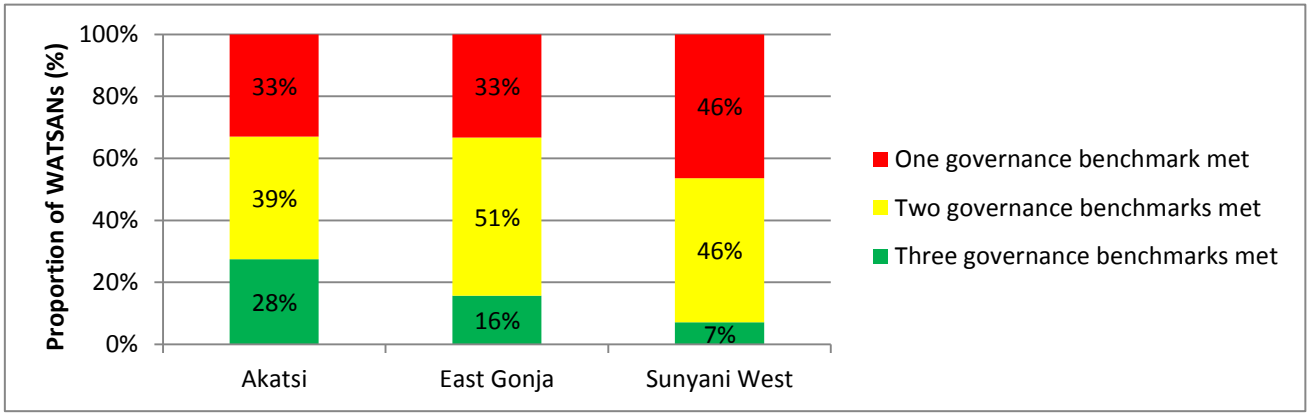
In Akatsi, a bit more than half of the WATSANs met the benchmark of having a **WATSAN which is constituted in line with the CWSA guidelines** and has received at least initial training. In East Gonja and Sunyani West, less than half of the WATSANs met this benchmark. In Sunyani West, but especially in East Gonja, vendors were often not in place at the point sources (only in 37% of WATSANs in East Gonja and 50% in Sunyani West). Initial training of WATSAN members had taken place in the majority of cases in East Gonja (85%) and Akatsi (70%), but only in a little over a third (36%) of the WATSANs in Sunyani West. Regular refresher training had rarely taken place in the three study districts (only in 6% of the WATSANs in East Gonja).

Less than one half of the WATSANs in the three districts met the benchmark of **keeping up-to-date account books which were (at least occasionally) shared with the community**. Keeping records up to date is a challenge for WATSANs. In East Gonja for example, just over one half (55%) of the WATSANs who have kept financial records had records that were less than a month behind. This situation was only slightly better in Akatsi (where 61% of the WATSANs who have kept records were up-to-date) and Sunyani West (84%). Where records had been kept, they were usually shared with the community (in over two-thirds of the cases).

Almost none of the WATSANs in the three study districts had experienced **political or chieftaincy influences** in their composition over the last year. However, such influences are not expected to arise until WATSANs are due for reconstitution, which is once every four years.

Figure 12 gives a visual representation of the proportion of WATSANS that met or exceeded the benchmark on one, two or three of the governance indicators. The graph shows that WATSANs in Akatsi scored better on this set of indicators than WATSANs in the other two study districts, but even here, only 28% of WATSANs met the benchmark on all three governance indicators.

Figure 12: Percentage of WATSANs meeting benchmarks on governance indicators



5.1.3 Operations indicators

WATSAN operations indicators:

- Availability of spare parts and area mechanics
- Corrective and periodic maintenance
- Routine water quality sampling and analysis

Only a little under one half of WATSANs in Akatsi and East Gonja and about 27% of those in Sunyani West which had required **spare parts** met the benchmark of being able to acquire the needed spares within at most three days. This indicates that access to spare parts is an issue[18]. Only in Akatsi and East Gonja District did a small fraction of the WATSANs (about 10%) manage to acquire spare parts within 24 hours of a fault being detected, thereby exceeding the benchmark.

More WATSANs met the benchmark related to **area mechanic services**. Just under two-thirds of the WATSANs in Akatsi (60%) and East Gonja (65%) reported that they could acquire the services of an area mechanic within at most three days, which is the benchmark for this indicator. The situation was less satisfactory in Sunyani West, were only 43% of the WATSANs met this benchmark[19].

Performance on **corrective** (as and when something breaks down) and **periodic (preventive) maintenance** seemed to mirror the availability of spare parts and area mechanic services in the three districts. A lower proportion of WATSANs meet the benchmark on these indicators in Sunyani West than in the other two districts. East Gonja had the highest percentage of WATSANs meeting the benchmark on corrective maintenance taking place within at most three days. Here, 65% of the WATSANs met the benchmark, while in Akatsi and Sunyani West, only 32% and 25% respectively of WATSANs managed to do so. Sunyani West also scored lowest on the periodic maintenance indicator, with only 46% of their WATSANs carrying out such maintenance. In Akatsi and East Gonja, larger proportions (76% and 82% respectively) of the WATSANs carried out periodic maintenance, with the majority doing so at least once a year.

Very few (20%) WATSANs met the benchmark of having **water quality sampling and analysis** done by recognised institutions (GWCL, WRI, GSB, SGS or KNUST laboratories) at least once a year. However, big differences were found on this indicator between the three districts. While none of the Akatsi and only few of the Sunyani West WATSANs reported undertaking water quality sampling and analysis, 63% of the WATSANs in East Gonja reported doing so. However, although water samples had been taken on a relatively big scale in East Gonja (mainly by Church of Christ, a local faith-based NGO), WATSAN committees were generally not informed on the results of these water quality tests.

Fig. 13 gives a visual representation of the proportion of WATSANs meeting the benchmarks on increasingly higher numbers of operational indicators. The graph shows that East Gonja has a bigger proportion of WATSANs meeting the operations benchmarks than the other two districts. A relatively high percentage of WATSANs in East Gonja met the benchmark related to corrective maintenance and water quality testing, while none of the WATSANs in Akatsi was found to do water quality testing, resulting in none of the Akatsi WATSANs meeting the benchmark for all operational indicators. In Sunyani, there were only few WATSANs (14%) that met the benchmark for two or more operational indicators.

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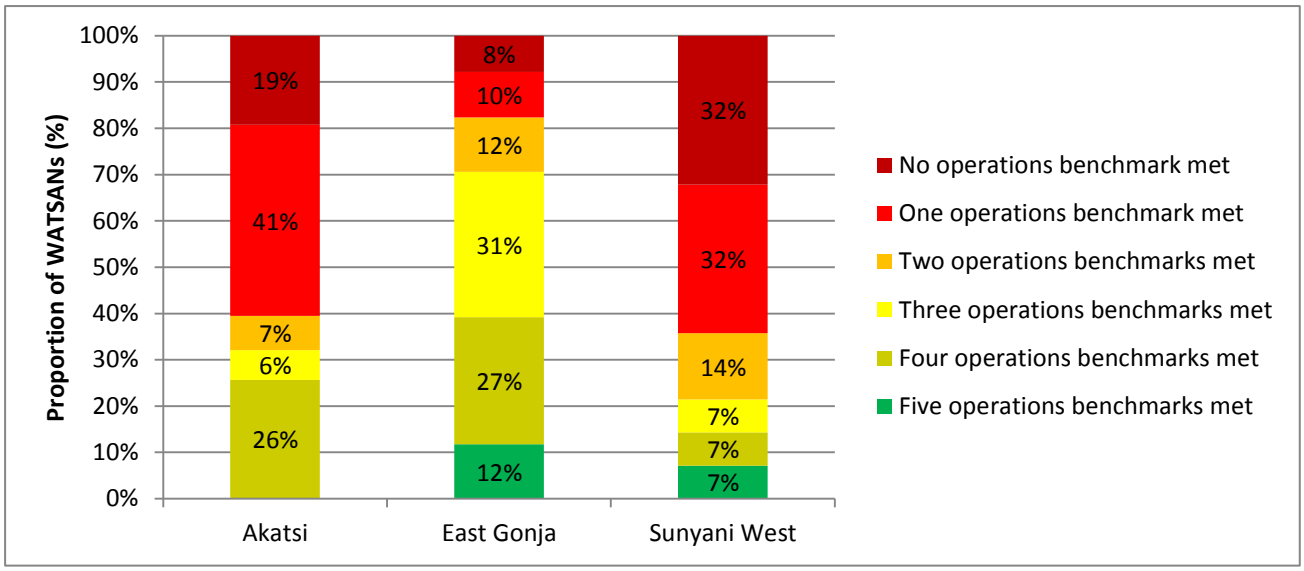
[18] In Akatsi, East Gonja and Sunyani West, 36%, 13% and 21% of the WATSANs respectively never required spare parts and could therefore not be scored on this indicator.

[19] In Akatsi, East Gonja and Sunyani West, 33%, 35% and 18% of WATSANS respectively have never acquired the services of an area mechanic and could therefore not be scored on this indicator.

Figure 13: Percentage of WATSANs meeting benchmarks on operational indicators



5.1.4 Financial management indicators

In total, 55% of WATSANs in the three districts reported having a positive **annual revenue–expenditure balance**. In Sunyani West, more than half (57%) of the WATSANs did not meet the benchmark because they failed to keep relevant data on revenues and expenditure. In Akatsi, about a third (32%) of the WATSANs had neither revenue nor expenditure records. Of the WATSANs which had data available and which collected revenues, 80% reported having revenues that exceeded their annual expenditures.

WATSAN financial management indicators:

Positive annual revenue and expenditure balance

Adequate financial management, accounting and auditing

Tariff setting based on projected costs

Together, WATSANs which had kept records of revenues and expenditures reported average annual revenues of GHC179 (GHC173 in Akatsi, GHC170 in East Gonja and GHC246 in Sunyani West). The average annual revenue per user was estimated at an incredibly low figure of GHC0.45 (GHC0.58, GHC0.21 and GHC0.56 in Akatsi, East Gonja and Sunyani West respectively).

The average annual expenditure, for WATSANs who had kept expenditure records, was GHC95 (ranging from GHC85 in Akatsi, to GHC106 and GHC107 in Sunyani West and East Gonja respectively). Per user, average annual expenditure was estimated at GHC0.24 (GHC0.30, GHC0.12 and GHC0.35 in Akatsi, East Gonja and Sunyani West respectively). This is of the same order of magnitude as the average expenditure of GHC0.21 per user per year, found by Nyarko et al (2011), in an earlier WASHCost study on expenditures at 53 point sources.

To meet the benchmark on the **financial management** indicator, a WATSAN should have a dedicated bank account as well as petty cash at its disposal. This was the case in only 38% of WATSANS in Akatsi and even less in East Gonja and Sunyani West (20% and 7% respectively). There is a dedicated bank account in only about one half of the WATSANs in the three districts. The average amount available in these bank accounts ranged between GHC158 in Sunyani West to GHC168 in East Gonja and GHC233 in Akatsi District. To exceed this benchmark, WATSANs should have their books audited. This, however, did not happen in any of the WATSANs.

Tariffs have been set by the majority (89%) of WATSANs in Akatsi District and in about two-thirds (68%) of WATSANs in Sunyani West, but only in 42% of WATSANs in East Gonja. Tariffs have generally not been set based on projected operations and maintenance (O&M) costs, as prescribed by the CWSA guidelines. Only in 4%, 22% and 19% of the WATSANs in Akatsi, East Gonja and Sunyani West respectively did WATSANs report setting tariffs based on projected operations and maintenance costs, meeting the tariff setting benchmark.

Most tariffs were set and collected on the basis of "pay as you fetch" (PAYF), especially in Akatsi, where 89% of WATSANs demand payment at the water point. In East Gonja and Sunyani West, 63% and 71% respectively of the WATSANs that had set a tariff had done so on PAYF basis. The remaining WATSANs had set tariffs on the basis of monthly levies, ranging between GHC0.10 and GHC1 per household per month.

The PAYF tariff ranged between GHC0.01 and GHC0.10 per 18-litre bucket, with GHC0.025 per bucket in more than 90% of the PAYF WATSANs in Akatsi and Sunyani West. In East Gonja, PAYF tariffs, where applied, were higher, with a tariff of GHC0.05 per bucket in 73% of the WATSANs with PAYF tariffs. At an equivalent of GHC1.38 to 2.77 per m^3 of water, the point source water tariffs are considerable higher than the (subsidised) lifeline tariff of GHC0.80 per m^3 charged to water users in small towns and larger urban areas by the Ghana Water Company Ltd.

The annual revenues of GHC0.45/user mentioned above are considerably lower that the potential revenues, which would amount to GHC9.13/user, in case all users use and pay for 1 bucket (of about 20 litres) per person per day at a tariff of 0.025 GHC per bucket. If users were to pay GHC0.05 per bucket as common in much of East Gonja, annual revenues would be of the order of GHC18/user. These suggest that actual water use is much lower than 20 litres per capita per day and/or that a considerable amount of water is not paid for.

Where WATSANs had set a tariff, regardless of whether this was done based on projected operations and maintenance costs, they generally scored higher on the financial management indicators than WATSANs which had not set tariffs. In total, about a third (31%) of WATSANs without tariffs had a positive annual revenue/expenditure balance, compared with about 63% of WATSANs with tariffs. About 61% of WATSANs who had set tariffs had dedicated bank accounts while only 26% of WATSANs without tariffs had a bank account. None of the WATSANs in Akatsi and Sunyani West without a tariff had a positive annual revenue/expenditure balance. In East Gonja, 15 WATSANs without a tariff reported a positive annual revenue/expenditure balance (which begs the question of what the source of the revenues was, if not revenues from fee collection based on some form of tariff).

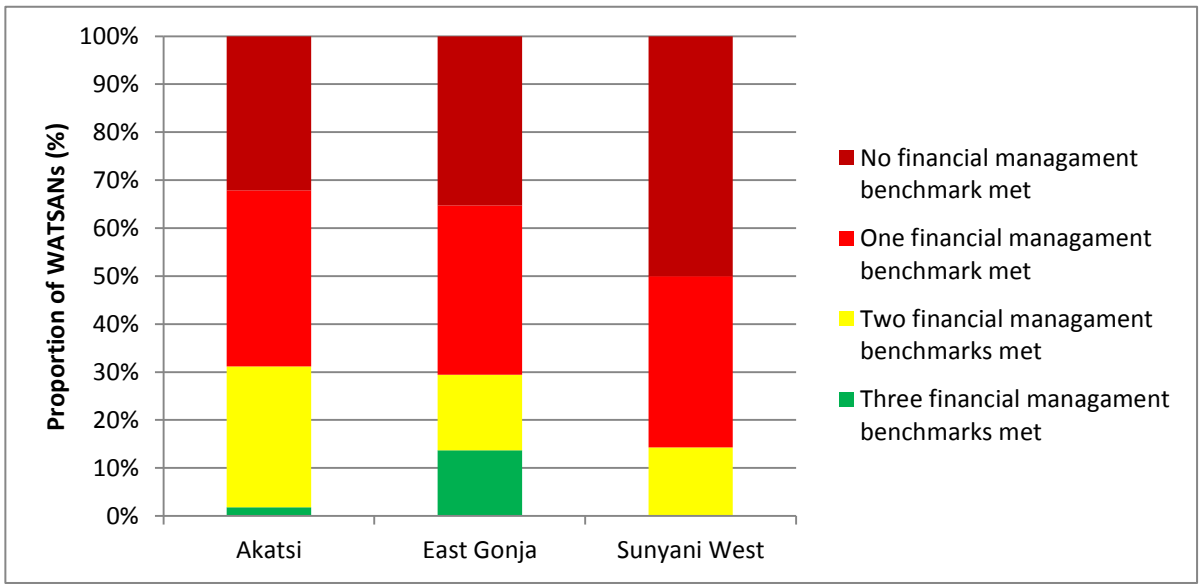
Whether or not a tariff had been set does not seem to have an influence on how WATSANs scored on the operational indicators. The only operational indicator where a difference in scores was observed between WATSANs with and without a tariff is the period maintenance indicator. Of WATSANs with tariffs, about 78% met the benchmark on the periodic maintenance indicator, while this was only the case for 59% of the WATSANs where no tariff had been set.

Figure 14 shows the proportion of WATSANs that meet the benchmarks on the financial management indicators. It shows considerably higher percentages of unmet benchmarks than the graphs in the governance and operations section, indicating that this is where WATSANs struggle most. WATSANs especially struggled to meet the benchmark on the tariff setting indicator and the financial management indicator.

Between the three districts, East Gonja had the highest percentage of WATSANs meeting the benchmark for all three financial management indicators. This is because only few WATSANs in Akatsi managed to

meet the benchmark on the tariff setting indicator, while in Sunyani West, almost none of the WATSANs met the benchmark on the financial management indicator.

Figure 14: Percentage of WATSANs meeting benchmarks on financial management indicators



5.1.5 Average WATSAN score overview

As WATSANs were scored on each indicator, an analysis can also be made on the average scores of the WATSANs in the three districts on the different indicators and on the three indicator groups. Figure 15 gives an overview of these average scores.

In all three districts, the average score of the governance indicators was higher (and statistically significant, with a 90% confidence level) than the average scores on the operational and financial indicators. This is, at least partly, due to the high score on the indicator related to the lack of political interference in the composition of WATSANs.

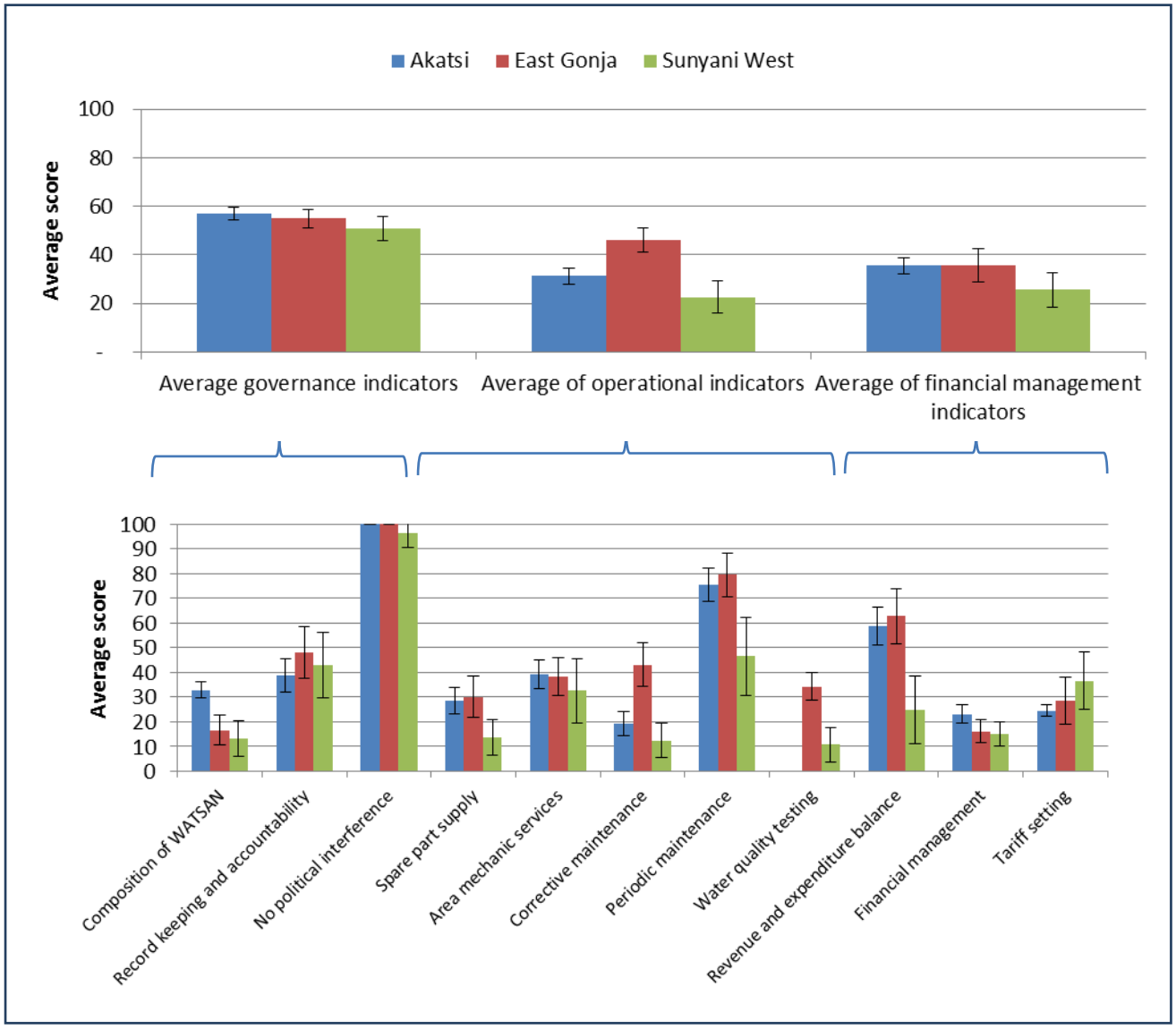
The average score of WATSANs in Akatsi district on the WATSAN composition indicator was significantly higher than for the other two districts. As mentioned above, this can be explained by the fact that unlike the other two districts, WATSANs in Akatsi generally had vendors in place (in line with CWSA guidelines). Linked to that, Akatsi also had the largest percentage of WATSANs which had set a tariff on pay-as-you fetch basis, to be collected by the vendor.

The average score on the operations indicators of WATSANs in East Gonja was higher (and statistically significant too) than for WATSANs in the other two districts. This was mainly due to the relatively high scores of East Gonja WATSANs on the corrective maintenance and water quality testing indicators.

The above comparison of WATSANs that meet the benchmark on the financial indicators suggests that East Gonja scores best on this indicator set. However, a different picture emerges when one limits the analysis to the average scores on these indicators. As shown in Figure 15, the average financial indicators score is similar for East Gonja and Akatsi, with no statistically significant difference between the scores on the tariff setting indicator for the three districts. This is mainly due to the fact that in Akatsi only a few WATSANs meet the tariff setting benchmark of having a tariff based on projected costs, but the majority of WATSANS have set a subjective tariff, giving them a score of 25 on this indicator. More than half of WATSANs in East Gonja have not set a tariff at all, giving then a score of 0, but many of the ones which did set a tariff, did so based on all projected costs, giving then a score of 100, exceeding the benchmark of 50. This results in

similar average scores on this indicator for Akatsi and East Gonja WATSANs, in spite of a big difference in the percentage of WATSANs meeting the benchmark.

Figure 15: Average WATSAN scores



5.1.6 Summing up WATSAN performance

In general, the above has shown that the performance of the WATSANs is far from optimal (100 score) and in most cases even far from acceptable (benchmark).

WATSANs scored highest on the governance indicators. However, this was to a large extent due to the high scores on the indicator related to the lack of political interference with the composition of the WATSAN, while scores on the other two governance indicators were less high. WATSANs in Akatsi District scored considerably higher on the WATSAN composition indicator than WATSANs in the other two districts.

Of the five operational indicators, WATSANs scored lowest on the indicators related to spare parts supply, corrective maintenance and water quality testing. Big differences were found between the scores of the

three districts on the corrective maintenance and water quality testing indicators, with East Gonja scoring higher than the other two.

WATSANs struggled especially to meet the benchmarks on the financial indicators related to financial management and tariff setting. WATSANs in Sunyani West generally scored lower than WATSANs in the other two districts. The exception was the tariff setting indicator, on which Sunyani West scored highest.

5.2 Piped scheme service providers

The management requirements for providing water services are higher for piped systems than for point sources. Therefore, unlike for point sources, piped schemes generally do have a formal management structure in place to operate and maintain the scheme.

Each of the six piped schemes in Akatsi District (one small town and five small community schemes) and each of the eight piped schemes in East Gonja (four clusters of standpipes connected to the GWCL scheme, three limited mechanised boreholes and one small town scheme) was managed by a community-based Water and Sanitation Development Board (WSDB). In Sunyani West, the small town scheme at Nsoatre is also managed by a WSDB, as well as 10 of the 14 limited mechanised boreholes. As two of the WSDBs managing mechanised boreholes manage two boreholes each, the total number of WSDBs managing limited mechanised boreholes in Sunyani West is eight. The four other mechanized boreholes were under private management, while the four clusters of standpipes connected to the GWCL scheme in Sunyani West were under direct management by GWCL. Table 11 gives an overview of the combinations of management models and types of schemes which together form the different service delivery models.

Table 11: Piped scheme service delivery models

	Akatsi	East Gonja	Sunyani West	Total
GWCL management of clusters of standpipes			1[20]	1
Private management of mechanised borehole			4	4
WSDB managing piped system connected to GWCL		4		4
WSDB managing one or multiple mechanized boreholes		3	8[21]	9
WSDB managing a small community piped system	5			7
WSDB managing a small town piped system	1	1	1	3
Total number of management structures	**6**	**8**	**14**	**28**
Total number of WSDBs	**6**	**8**	**9**	**23**

[20] Managing four clusters of standpipes

[21] Eight WSDBs managing a total of 10 limited mechanized boreholes, with two WSDBs managing two limited mechanized boreholes each.

5.2.1 Benchmarking overview

Indicators were developed to assess the performance of the WSDBs, in line with the CWSA guidelines. As these indicators were WSDB-specific, the discussion below will mainly present the performance of the WSDBs, rather than the performance of the private service providers, unless stated otherwise.

The performance of the WSDBs was scored from 0 (worst case) to 100 (best case) against nine service provider indicators. For each indicator, a benchmark was set, which presents the minimum acceptable level of performance on that indicator. Table 12 shows the management structures that met the service provider benchmarks.

As shown in Table 12, piped scheme service providers fail to meet most benchmarks on the indicators. An exception is the indicator related to the lack of political interference, on which all service providers in Akatsi and Sunyani West, and most service providers in East Gonja, met the benchmark.

Below, we explore further each of the service provider indicators. The scoring tables with more details on the scores can be found in the annex.

Table 12: Percentage of WSDBs meeting the benchmark score

Indicator Group	Indicator	Akatsi (n=6)	East Gonja (n=8)	Sunyani West (n=9)	Total (n=23)
Governance	Composition of the management structure	0 (0%)	0 (0%)	0 (0%)	0 (0%)
	Adequate record keeping and accountability to community	5 (83%)	4 (50%)	3 (33%)	12 (52%)
	No political or chieftaincy influence in the composition of the management structure	6 (100%)	7 (88%)	9 (100%)	22 (96%)
Operations	Private sector support	3 (50%)	1 (13%)	2 (22%)	6 (26%)
	Work plan and budget for O&M	0 (0%)	1 (13%)	3 (33%)	4 (17%)
	Water quality sampling and analysis	2 (33%)	2 (25%)	1 (11%)	5 (22%)
Finance	Positive revenue and expenditure balance	5 (83%)	5 (63%)	1 (11%)	11 (48%)
	Adequate financial management, accounting and auditing	0 (0%)	3 (38%)	1 (11%)	4 (17%)
	Tariff setting based on projected costs	0 (0%)	0 (0%)	4 (44%)	4 (17%)

5.2.2 Governance indicators

The CWSA small town operations and maintenance guidelines give specific requirements regarding the **composition of a WSDB**, including the functions, minimum levels of education of WSDB members and minimum proportion of female members (one third). However, none of the WSDBs in the three study districts was constituted in this way. Only the WSDB managing the small town scheme in Sunyani West

WSDB governance indicators:

- Composition of WSDB in line with CWSA guidelines
- Adequate record keeping and accountability to community
- No political or chieftaincy influence in the composition of the WSDB

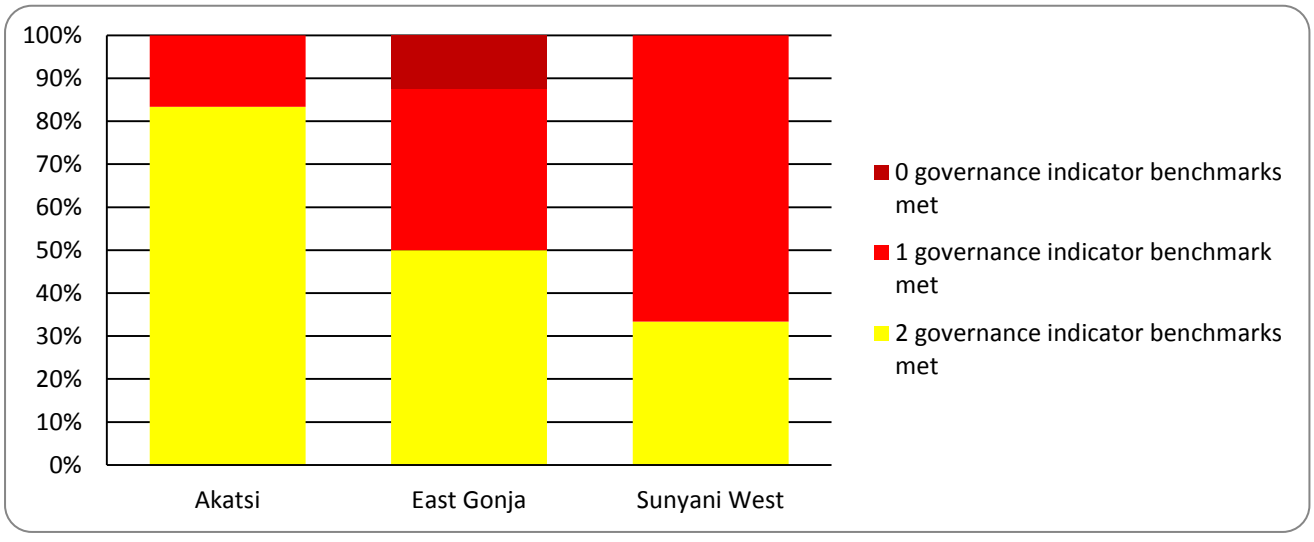
and one managing a limited mechanised borehole in the same district consisted of staff fulfilling all prescribed functions. Even then, the members of the small town WSDB were not sufficiently qualified, while that for the limited mechanised borehole did not include women. All WSDBs in Akatsi, East Gonja and two WSDBs managing limited mechanised boreholes in Sunyani West did have at least 50% of the required staff. Not having a scheme manager was the main hurdle preventing the WSDBs in Akatsi and East Gonja from meeting the benchmark on the WSDB composition indicator. All small town WSDBs, most of the small community WSDBs and those managing GWCL standpipes, and about half of the WSDBs managing limited piped schemes had received initial training. About a quarter of the WSDBs had participated in refresher training, which was considerably higher than the 6% of WATSANs which had received such re-training.

The majority of WSDBs in Akatsi met the benchmark of **having up-to-date account books which are shared with the community**. The WSDBs managing piped schemes connected to the GWCL system in East Gonja also met this benchmark, while three WSDBs managing limited mechanised boreholes and the one managing the Salaga small town scheme did not. In Sunyani West, only three WSDBs managing limited mechanised boreholes met the benchmark.

Political interference in the composition of the WSDB was only found to be an issue for the WSDB managing the small town water system in Salaga, in East Gonja District.

Figure 16 gives a visual representation of the WSDBs that meet two (yellow), one (red) or none (dark red) of the benchmarks on the three governance indicators in each of the three study districts. It shows that none of the WSDBs managed to meet the benchmark on all three indicators as none of them met the benchmark on the indicator related to the composition of the WSDB. It also shows that Akatsi district has the largest percentage of WSDBs meeting the benchmark on both of the other governance indicators.

Figure 16: Governance indicators



5.2.3 Operations indicators

About a quarter of the WSDBs in the three districts indicated that they had **access to all needed support from private** sector related to spare parts and technical services. The availability of spare parts and private sector to support minor maintenance is especially an issue for WSDBs managing systems connected to GWCL

WSDB operations indicators:

- Availability of private sector to supply spare parts and technical services
- Work plan and budget for operations and maintenance
- Water quality sampling and analysis

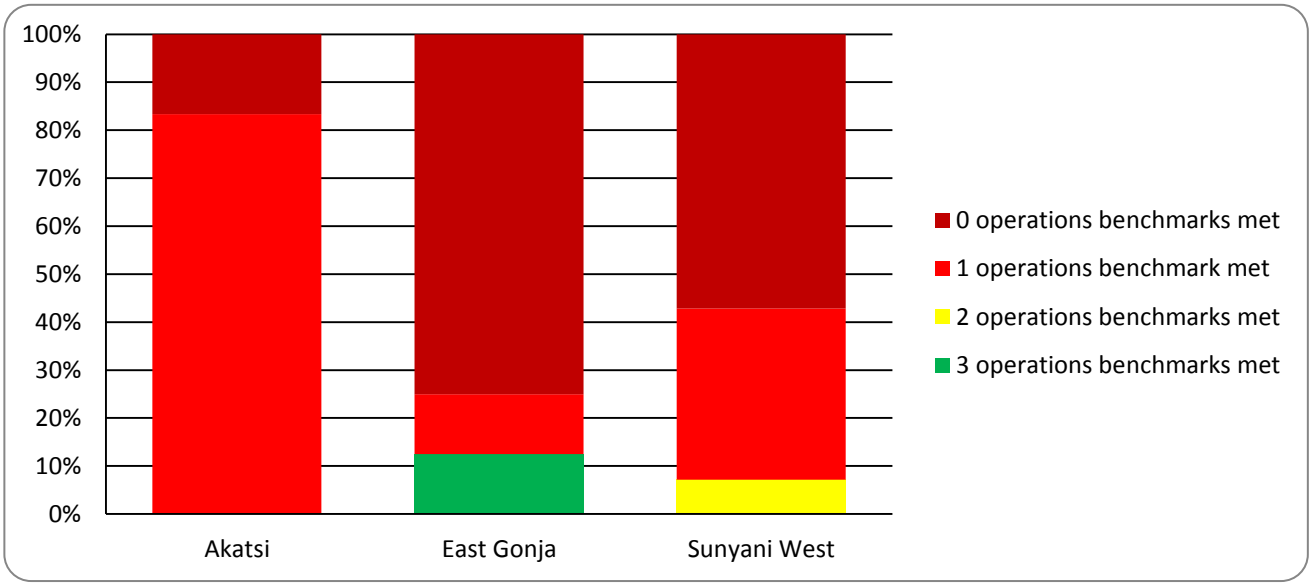
and mechanised boreholes. This could be due to the fact that these types of schemes are relatively new and therefore an efficient private sector and spare parts supply system to support these types of schemes has not been fully developed yet.

Few WSDBs were found to undertake **periodic maintenance** according to a maintenance schedule. The majority of WSDBs (19 out of 23) did not have a maintenance schedule. Only two WSDBs managing limited mechanised boreholes in Sunyani West and the WSDB managing the small town scheme in East Gonja and Sunyani West undertook routine and periodic maintenance according to the maintenance schedule.

Also only few WSDBs met the benchmark of having **quality sampling and analysis** done by recognised institutions (GWCL, WRI, GSB, SGS or KNUST laboratories) at least once a year. Only the small town WSDBs in East Gonja and Sunyani West, two of the three small community WSDBs in Akatsi and one of the limited mechanised borehole WSDBs did.

Figure 17, which gives an overview of the proportion of WSDBs meeting the operations benchmarks, shows that the WSDBs struggled to meet these.

Figure 17: Operational indicators



5.2.4 Financial management indicators

Data on **annual revenue and expenditure** were not available from the limited mechanised borehole WSDBs in Sunyani West. Neither were they available for two of the three limited mechanised borehole WSDBs in East Gonja. Of the remaining 13 WSDBs, 11 (85%) managed to collected annual revenues that exceeded their annual expenditures. Exceptions were a small community system in Akatsi District (Avenorpedo community, where high revenues (GHC6433) had been exceeded by even higher expenditure (GHC6867) and the Salaga small town system in East Gonja, where no tariff had been set and no revenues had been collected.

WSDB financial management indicators:

Positive annual revenue and expenditure balance

Adequate financial management, accounting and auditing

Tariff setting based on projected costs

Table 13 presents an overview of the average annual revenue and expenditure for WSDBs managing different schemes in the three districts. It shows that the WSDBs managing small towns have the highest annual revenue and expenditure, while the WSDBs managing small community piped schemes have the highest average revenue and expenditure per user. Annual expenditure per user of small community and small town schemes was considerable higher than that of point sources (GHC0.24/user).

Table 13: Average annual revenue and expenditure for different piped schemes

	Connected to GWCL (n=4)	Mechanised borehole (n=1)	Small community piped system (n=5)	Small town system (n=2)
Average annual revenue (GHC)	124 (0.19/user)	226 (1.66/user)	6,801 (2.85/user)	13,500 (1.32/user)
Average annual expenditure (GHC)	6 (0.01/user)	26 (0.19/user)	4,880 (1.90/user)	8,212 (0.80/user)

Only three of the four WSDBs managing standpipe clusters connected to GWCL and one of the nine WSDBs managing limited mechanised boreholes met the benchmark related to the sound **financial management** indicator of having at least an operational and a capital account, into which at least 20% of the net revenues is deposited, in line with the model WSDB by-laws. None of the WSDBs in Akatsi District met this benchmark as none of them had a capital account. Two WSDBs managing small community schemes in Akatsi and the WSDB managing the Nsoatre Small Town Scheme in Sunyani West did indicate that their accounts were audited from time to time.

Tariffs have been set by all WSDBs in Akatsi, by half of the WSDBs in East Gonja and by more than half of the WSDBs in Sunyani West. In schemes where tariffs have been set, pay-as-you-fetch at the standpipe was the typical method of fee collection. In Sunyani West and East Gonja, the standpipe tariff had been set at GHC0.05 per bucket. In Akatsi District, the tariff varied between GHC0.02 (in the Akatsi small town systems) and GHC0.05 per bucket (in the Ave Dakpa small community system).

Assuming water use is at least one bucket (about 20 litres) per person per day, the expected annual revenues would amount to GHC7.30 and GHC18.25 GHC per capita for schemes with a tariff of GHC0.02 and GHC0.05/ bucket respectively. This is much higher than the actual annual per capita revenues indicated in the table above. Similarly, as for the point sources, this suggests that water use from the piped schemes is lower than 20 litres per capita per day and/or that many people do not pay for the water they use.

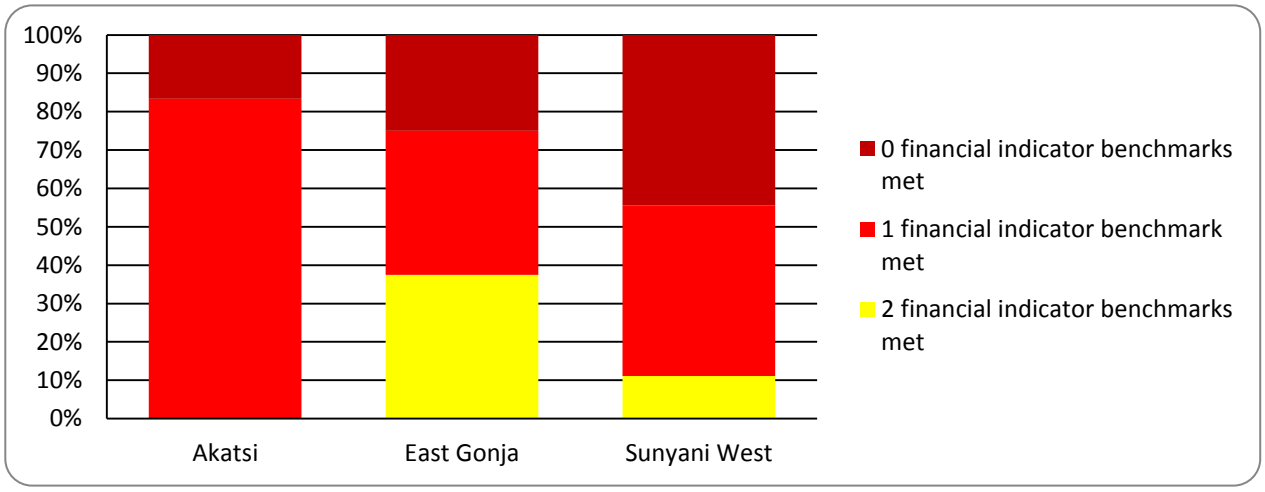
In one scheme consisting of standpipes connected to the GWCL scheme in East Gonja, revenues were collected on a monthly levy basis (GHC1.00 per household per month). Assuming a household consists of 7 persons,[22] expected revenues would amount to GHC1.71/capita/year. However, actual revenues amount to only about 15% of that (GHC0.25/capita/year), which suggests that many households are not paying the monthly fee of GHC1 in this community.

Tariffs and budgets should be based on projected costs, including operations and maintenance, replacement and rehabilitation, and sanitation costs. However, none of the WSDBs managing small community and small town systems had considered projected costs in the setting of their tariff. In Sunyani West, the tariffs set for four out of the six WSDB-managed mechanised boreholes and of two of the four privately-managed mechanised boreholes were reported to have been based on projected costs.

[22] According to the 2010 national census (GSS, 2012) the household size in East Gonja is 7.1

Figure 18 presents the percentage of WATSANs that met the financial management indicators.

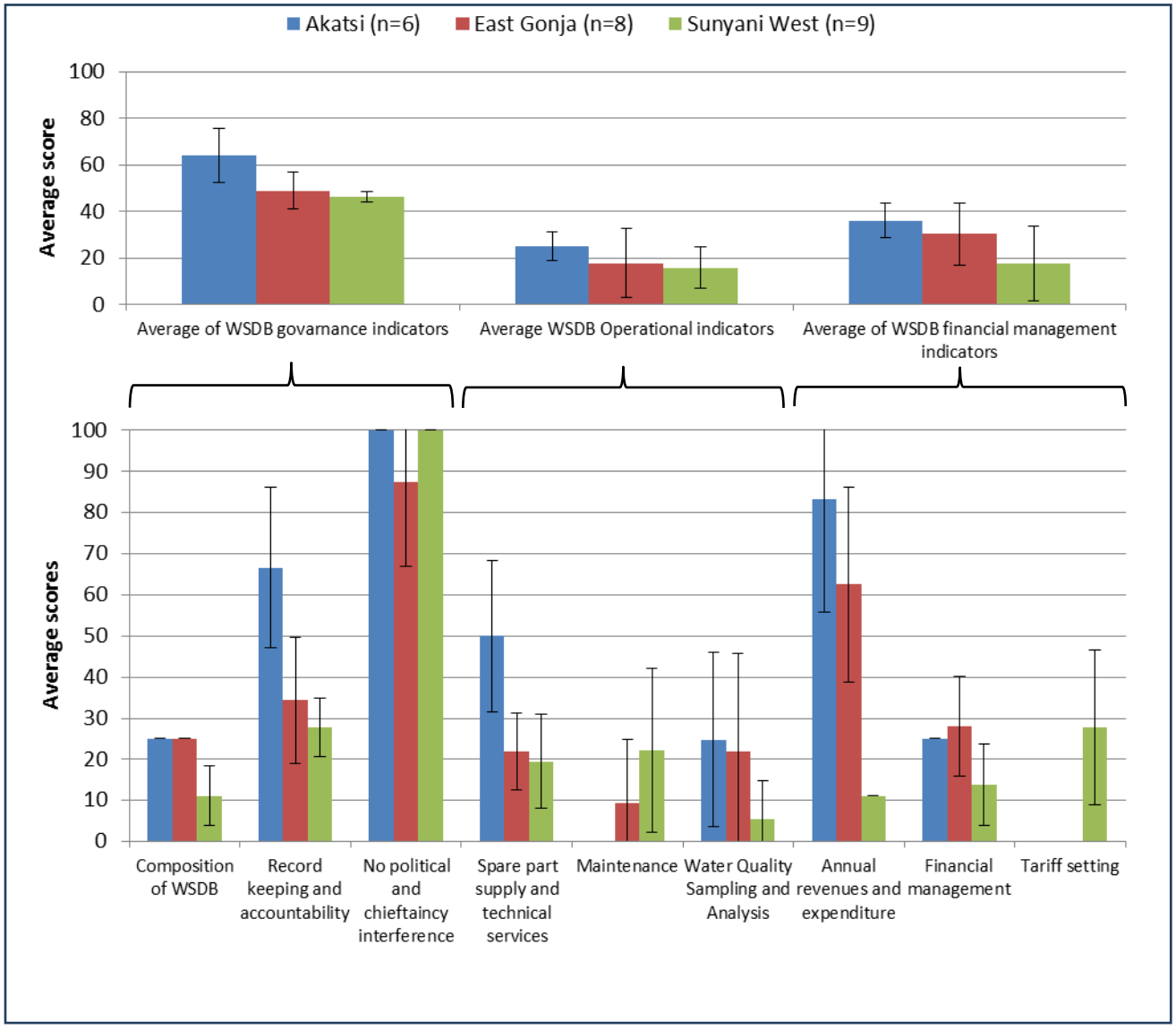
Figure 18: Financial indicators



5.2.5 Average WSDB score overview

Figure 19 gives an overview of average scores on the WSDB indicator sets in the three districts. As shown, the average score on the operations indicators is statistically significantly lower than the average score on the governance indicators. The average scores on the indicators present a similar picture as the benchmarking results presented above. The Akatsi WSDBs score highest on record keeping, spare parts supply and annual revenues. The Sunyani West WSDBs score lowest on most indicators, with the exception of the maintenance and tariff setting indicator. However, due to the small sample size, the margins of error are relatively large and statistically significant correlations are difficult to determine (with a confidence level of 90%).

Figure 19: Average WSDB scores



5.2.6 Summing up WSDB performance

In general, WSDBs managing piped schemes in the three districts scored low on the service provider indicators. None of the WSDBs was found to have been constituted in line with the CWSA guidelines. In all three districts, WSDBs also scored low on the indicators relating to maintenance work plans and budgets, water quality testing, financial management and tariff setting. Overall, less than a fifth of WSDBs met the benchmarks on these indicators and average scores were below 25.

On most comparable indicators, WSDBs scored lower than the WATSANs. Where none of the WSDBs in the three study districts met the benchmark on the indicator related to the composition of the WSDB, at least about 43% of the WATSANs did. It should however be noted that the requirements related to number, positions and qualifications of WSDB staff members, as described in the CWSA guidelines, are far higher than those of WATSANs. It can be argued either the staff requirement and the benchmark based on this are set too high, or that the staff requirements are realistic for the management of piped schemes, but communities genuinely struggle meeting these requirements. As there are different types of piped schemes

which have different management requirements, there might be a need for clearer differentiation between different service delivery models.

Whereas for the WATSANs the scores on the indicator relating to administration and downward accountability were of a consistent magnitude, there were large differences in scores between the three study districts for the WSDBs, with the Akatsi WSDBs scoring relatively high.

Political interference in the composition of the WSDB was only found to be an issue in the Salaga WSDB in East Gonja. This study did not look into the causes and effects of this interference but, of the three small town piped systems, this was the only one where no tariffs were raised to pay for operations and maintenance and which provided unreliable water services.

WSDBs in the three districts scored low on the operations indicators. The lower scores for the WSDBs (relative to the WATSANS) on the indicators relating to spare part supply and technical services from the private sector suggest that spare parts supply and technical services provided by the private sector are better arranged for point sources than for piped systems. A reason for this could be that these types of schemes are relatively new in the sector and that projects targeting improvements in spare parts supply have, in the past, focussed on spares for hand pumps.

Few WSDBs in the three districts had developed work plans and budgets to facilitate effective and timely maintenance, as prescribed by the CWSA guidelines, and predictably scored low on the maintenance indicator. Water quality testing was rare for the piped systems in all three districts.

Like the WATSANs, the WSDBs in Akatsi and East Gonja scored relatively high on the indicator relating to the balance between revenue and expenditure. The Sunjani West WSDBs scored lower than the other two districts on this indicator, influenced particularly by the fact that many WSDB did not keep financial records.

None of the WSDBs met the benchmark of having three dedicated accounts (operational, capital and sanitation) prescribed in the WSDB model by-laws. Of the three study districts, Sunyani West scores best on the tariff setting indicator, with the largest proportion of WSDBs having set tariffs based on projected costs.

6 Results: Performance of the service authority

The service authority indicators used in this study include indicators relating to direct support from the district to community-based service providers as well as indicators relating to district-level planning and coordination. Indicators relating to direct support to service providers were assessed by asking both the service provider (WATSAN/ WSDB) about the direct support received and well as by asking the support agency (the District Assembly (DA), together with its District Water and Sanitation Team (DWST)). This chapter presents the results of the baseline assessment relating to the functions of the service authorities.

6.1 Direct support to service providers

Direct support from the service authority to community-based water service providers mostly takes place through regular monitoring of the WATSANs and WSDBs by the District Water and Sanitation Teams. This monitoring should include checks on the administrative, operational and financial performance of the WATSANs/ WSDBs. Where the findings of the monitoring exercise indicate a need for technical support, the service authority is expected to provide such support to the relevant WATSAN or WSDB.

Whether or not WATSANs managing point sources received monitoring support appears neither to be influenced by the age of the point sources nor by the implementer, but rather by the district. This is consistent with the fact that it is the District Assemblies who have primary responsibility for this function. Table 14 presents a summary of WATSANs and WSDBs meeting the benchmark, together with the average scores on this indicator for each of the three districts.

Table 14: Monitoring support to WATSANs

	Akatsi (n=109)	East Gonja (n=51)	Sunyani West (n=28)	Grand Total (n=288)
% of WATSANs for which the benchmark is met	87%	28%	7%	59%
Average score WATSANs	65	22	4	44
% of WSDBs for which the benchmark is met	100%	0%	33%	38%
Average score WSDBs	79	3	22	30

The table shows that monitoring of WATSANs' operations and maintenance was conducted more consistently by district staff in Akatsi District than in the other two districts. As shown in the table, all WSDBs in Akatsi District received monitoring support above the benchmark while in East Gonja, none of the WSDBs received monitoring support and in Sunyani West, only three out of nine WSDBs did. A reason for this could be the fact that Akatsi District was one of the districts where the Monitoring Operations and Maintenance (MOM) tool was piloted under a DANIDA Project (see Box 2).

Box 2 : Monitoring operations and maintenance (MOM)

Under CWSA's Monitoring Operations and Maintenance (MOM) model, quarterly visits are expected to be undertaken to water user communities by each district's Environmental Health Assistants (EHAs). During these visits, the EHAs are expected to undertake technical audits to determine how well the facilities are functioning, review financial records and check payment practices. The visits also provides an opportunity for the EHAs to recommend improvements and provide technical assistance where needed. Records of the quarterly audits are supposed to be compiled at the district level, giving district-level officers a systematic picture of what is happening in the district. MOM reports are then supposed to be submitted to and aggregated by the regional CWSA MOM unit who, in turn, submit reports to national level.

The Danish aid agency, DANIDA, funded the first MOM in the Volta Region in 2002 and 2003, after which CWSA took it up in its guidelines as something that should be practiced by all districts in the country. However, in reality, few districts practice MOM. As found by Komives et al in 2006, even in Volta Region, where MOM was initially piloted, only four districts have continued the MOM audits on a quarterly basis after the programme reverted from DANIDA back to the local governments. Other districts have, likewise, reduced the frequency of these EHA visits due to resource constraints.

6.2 Other service authority functions

In addition to the assessment of the level of direct monitoring support providers by the service authority (DA/DWST) to the community-based service providers (WATSANs and WSDBs), a number of other indicators have been developed to assess the service authorities. These do not relate merely to individual WATSANs or WSDBs, but to the DWST and district as a whole.

Table 15 gives an overview of the performance of the three study districts on these indicators. A fuller version of the scoring tables can be found in the Annex.

Table 15: Scores on the service authority indicators

Indicator	Akatsi	East Gonja	Sunyani West
Presence of the DWST	0	25	25
Monitoring and data flows	25	25	0
District level budget allocation and utilisation	50	0	0
Facility management plans and by-laws	25	0	25
Coordination of NGOs	75	0	0
Number of service authority benchmarks met	**2**	**0**	**0**
Average service authority score	**25**	**10**	**10**

Presence of the DWST: Although the Akatsi District Water and Sanitation Team was found to be the best resourced and trained of the three study districts, it scores lowest on this indicator as it lacked a community development officer as part of the DWST. There might therefore be a need to review the scoring of this indicator. The District Water and Sanitation Teams of East Gonja and Sunyani West did have

a three-member team, but were not sufficiently resourced to undertake their functions and therefore did not meet the benchmark on this indicator.

Monitoring and data flows: Only in Akatsi and East Gonja are some, but not all, (static) data inputs for the water supply facilities (including data on operations and maintenance) routinely collected and stored by the district. This data is occasionally sent to the regional CWSA office, but not on a quarterly basis, as prescribed by the CWSA guidelines.

District level budget allocation and utilisation: No data could be obtained on the budget for district level investment in water facilities in East Gonja and Sunyani West. In Sunyani West, data on the operational budget was also unavailable. Only Akatsi District had an annual budget for both operations and investments relating to water supply, thereby meeting the benchmark on this indicator.

Facility management plans and by-laws: In Akatsi and Sunyani West, facility management plans are in place that spell out the rules for the WATSANs/WSDBs. However, these were not updated on an annual basis. By-laws to legalise and regulate WATSANs and WSDBs were also found to be not in place.

Coordination of NGOs: In Akatsi District, the majority of NGOs were said to inform the DA about implementation activities through providing facility data on new systems and aligning their implementation to the DWSP. Further, the DWST here tries to ensure that NGO activities are in line with CWSA standards, norms and guidelines. This was not the case in the other two districts, explaining the high score for Akatsi and the low scores for the other two study districts on this indicator.

Summing up, the three study districts scored very low on the service authority indicators, with only Akatsi meeting two of the five benchmarks. Akatsi also scored highest on the monitoring support indicator. This was mainly due to the fact that Akatsi District, unlike the other two districts, had been part of the DANIDA project to improve monitoring of operations and maintenance.

7 Correlations between facility, service provider and service authority indicators

This chapter presents the cross analysis over the different indicator sets. It explores relationships between the functionality of facilities, the levels of service that the facilities provide, the performance of service providers and the performance of service authorities.

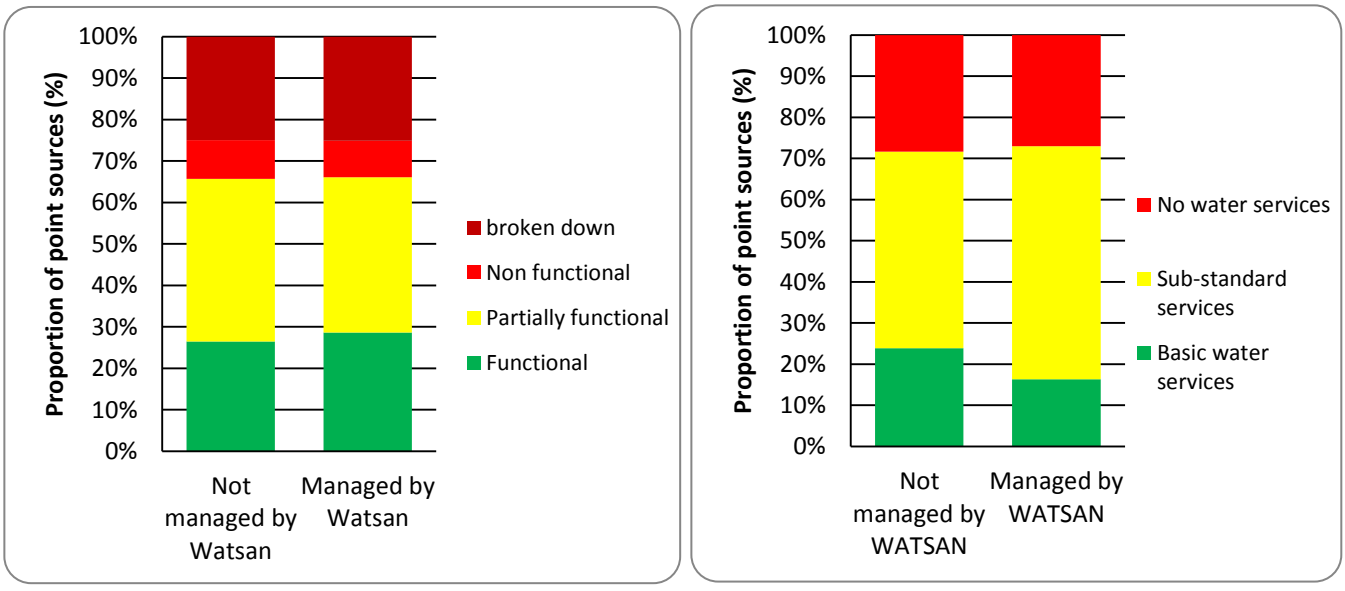
7.1 Facility and service provider indicators

We begin by examining the correlation between the performance of facilities on one hand and the performance of community-based water service providers on the other. These correlations are first discussed for point sources and their WATSANs, after which the focus switches to piped systems and their WSDBs.

7.1.1 Point sources and WATSANs

Interestingly, as shown in Figure 20, no big difference in functionality was found between point sources managed by a WATSAN and point sources not managed by a WATSAN Committee. The percentage of point sources providing a basic level of service was actually lower for WATSAN-managed point sources than for non-WATSAN managed point sources. This suggests that whether or not a WATSAN is in place does not make a difference for the functionality of the point source and the level of service it provides. It could be that point sources without a WATSAN were managed in a different, more effective way (e.g. managed by an individual, who takes greater responsibility for and better care of the point source). However, as this study focussed on the formal structures which were supposed to be put in place as per the CWSA guidelines, the structure and workings of the alternative providers were not explored in detail. In follow-up studies, this should be taken into account.

Figure 20: Functionality of point sources managed and not managed by WATSANs



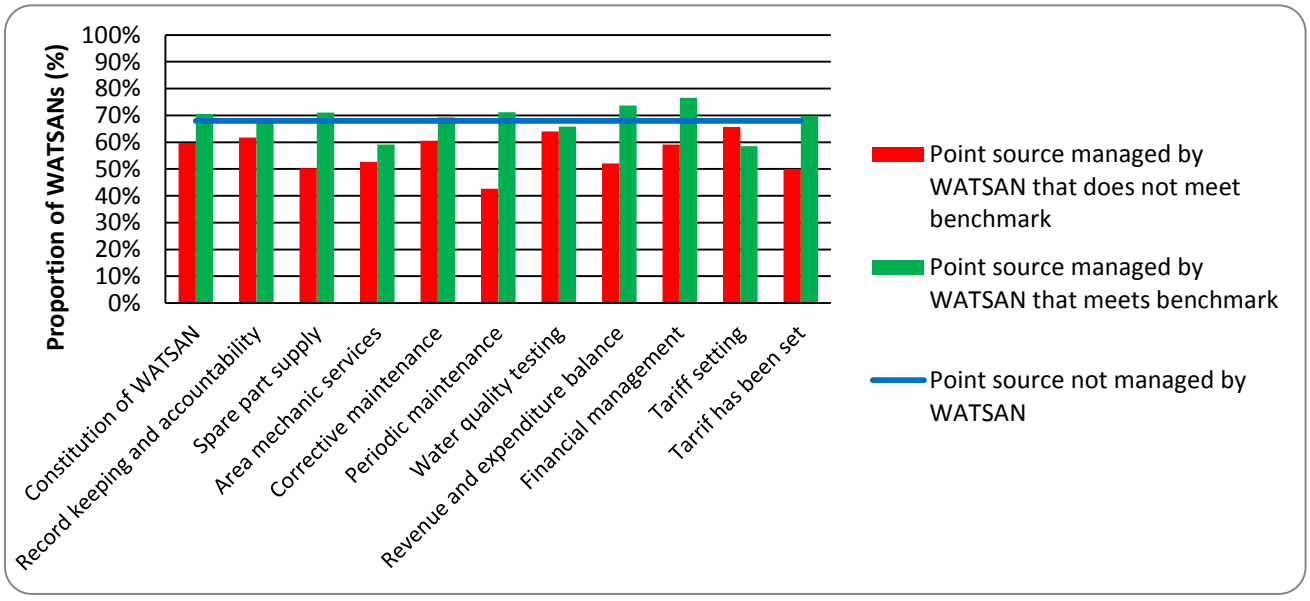
It might also be that the performance of the WATSAN, rather than merely its presence or its formal structure, has more impact on point source functionality and service levels. The correlations between WATSAN scores and the level of services provided were explored in an effort to investigate this. However, the data did not present clear correlations between average WATSAN scores and service levels (as illustrated in Appendix 7.5). That said, the analysis of the correlations between WATSAN scores and service level sub-indicators (reliability, crowding, distance, quality and quantity; see Appendix 7.6) showed that:

- The average WATSAN score was (statistically significantly) higher for reliable point sources than for unreliable point sources.
- The average WATSAN score was (statistically significantly) higher for crowded point sources than for un-crowded point sources. This could mean that well-managed point sources are more popular and therefore more crowded than point sources which are not well-managed.
- No statistically significant correlations were found between the average service provider score and the other service level sub-indicator (distance, quantity, quality)

As the service level is a function of reliability, non-crowding, distance, quantity and quality, some of which have little (distance, quantity, quality) or negative (non-crowding) correlations with the WATSAN scores, there is no clear correlation between service level scores and WATSAN scores. As the positive relationship is strongest between facility reliability and WATSAN scores, the rest of the correlation analysis between performance of service providers and service levels pays more attention to the reliability of facilities.

In general, the proportion of reliable point sources was found to be higher for point sources managed by WATSANs that met the benchmark on the service provider indicators (shown in Figure 21 in green) than for point sources managed by WATSNANs that did not (in red). This indicates a positive correlation between the performance of the WATSANs and the reliability of point sources. However, it is only for the indicators relating to *spare parts supply*, *periodic maintenance*, *revenue and expenditure balance*, and *financial management* that a statistically significant positive correlation (with a confidence level of 90%) was observed between point source reliability and service provider score (see Appendix 7.7).

Figure 21: Reliability and WATSAN indicator benchmarking



Point sources managed by WATSANs that meet the benchmark on these indicators have a (slightly) higher reliability rate than point sources not managed by WATSAN (indicated in the graph by the blue line). In other words, whether or not a system is managed by a WATSAN does not matter much for reliability. It is the performance of the WATSANs that matters, as measured by the indicators mentioned above.

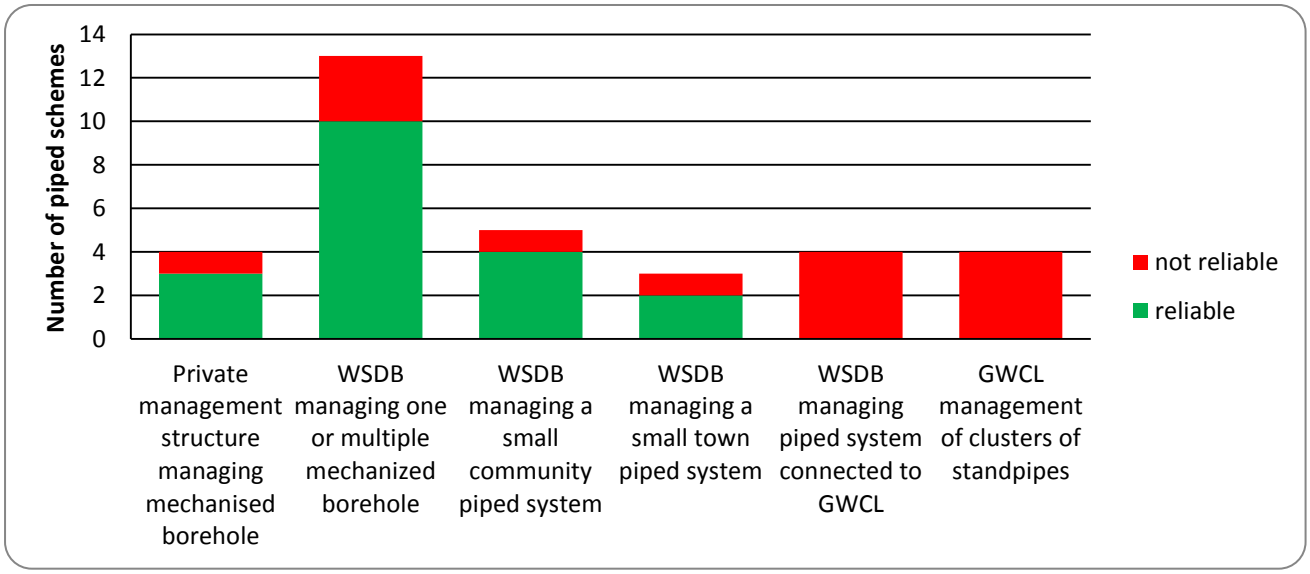
The graph also shows that the percentage of reliable point sources is slightly lower for point sources managed by WATSANs that meet the benchmark on the tariff setting indicator than for point sources managed by WATSANs that do not. However, point sources tend to be more reliable where a tariff has been set than where this has not been done. This suggests that the correlation between reliability and the presence of a tariff is stronger than between reliability and the benchmark on the tariff setting indicator of having a tariff based on projected costs.

Average annual revenue and expenditure was found to be higher for reliable point sources (GHC164 and GHC82 respectively) than for non-reliable point sources (GHC101 and GHC63). This can mean that more reliable point sources lead to more revenues; or it can also mean that higher revenues and expenditures allow point sources to be better maintained and to provide more reliable services, or both.

7.1.2 Piped schemes and WSDBs

As presented in section 4.2.1, the majority of piped schemes were found to be functional. The partially functional and the three non-functioning limited mechanised boreholes were WSDB-managed. A larger number of piped schemes were found to provide unreliable water services. As illustrated in Figure 22, the reliability does not differ significantly between privately-managed and WSDB-managed piped schemes. The exceptions are the WSDB and GWCL-managed standpipe clusters connected to the GWCL network, which were all found to provide unreliable services. Thus, the type of management does not seem to have a huge influence on reliability. Rather, it is the nature of the water supply (the GWCL supply scheme) that affects the reliability of the service.

Figure 22: Reliability of privately, GWCL and WSDB-managed piped schemes



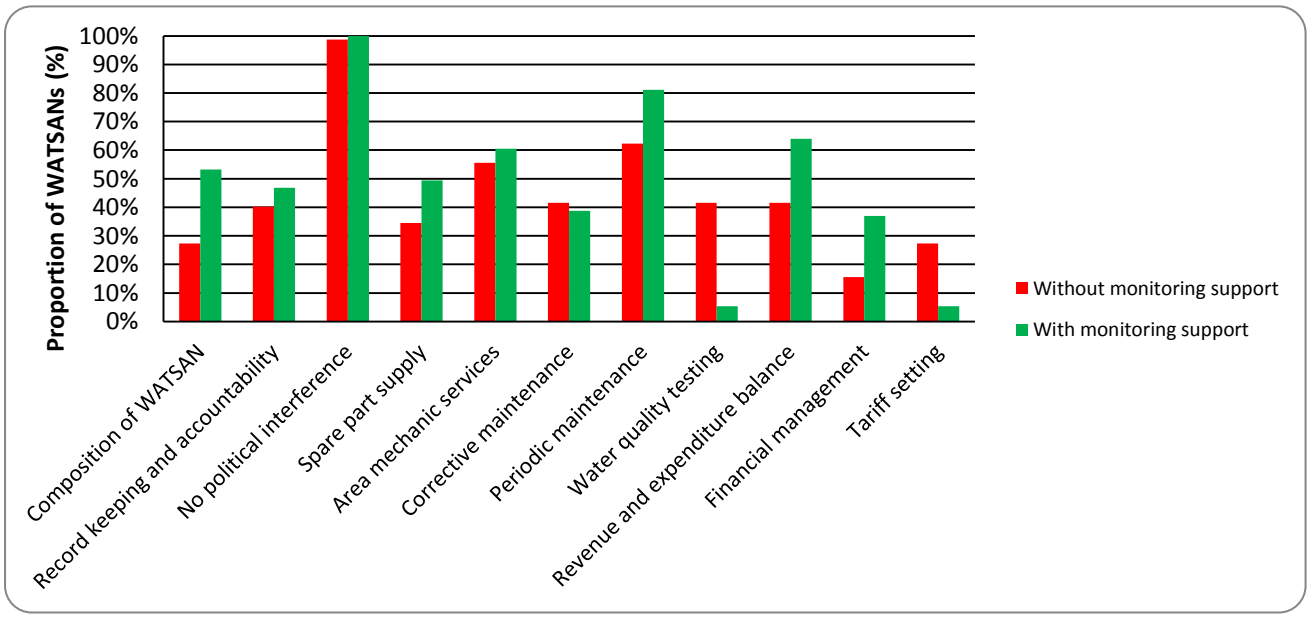
The number of piped schemes in the three study districts is considerably lower than the number of point sources. Therefore, it is impossible to find statistically significant correlations between reliability and WSDB indicator scores, as illustrated in Appendix 7.11.

7.2 Service provider and service authority

This section explores the correlation between the level of support from district level and the performance of community-based service providers.

For WATSANs that met the benchmarks on the various sub-indicators, Figure 23 illustrates the difference between the WATSANs that received monitoring support and those that did not.

Figure 23: Monitoring support and WATSAN benchmarking



The graph shows a generally positive correlation between WATSAN performance on the different indicators and the support they have received. WATSANs with monitoring support scored statistically significant higher than WATSANs without monitoring support, on the following indicators (see Appendix 7.10a):

- Composition of the WATSAN
- Spare parts supply
- Periodic maintenance
- Financial management

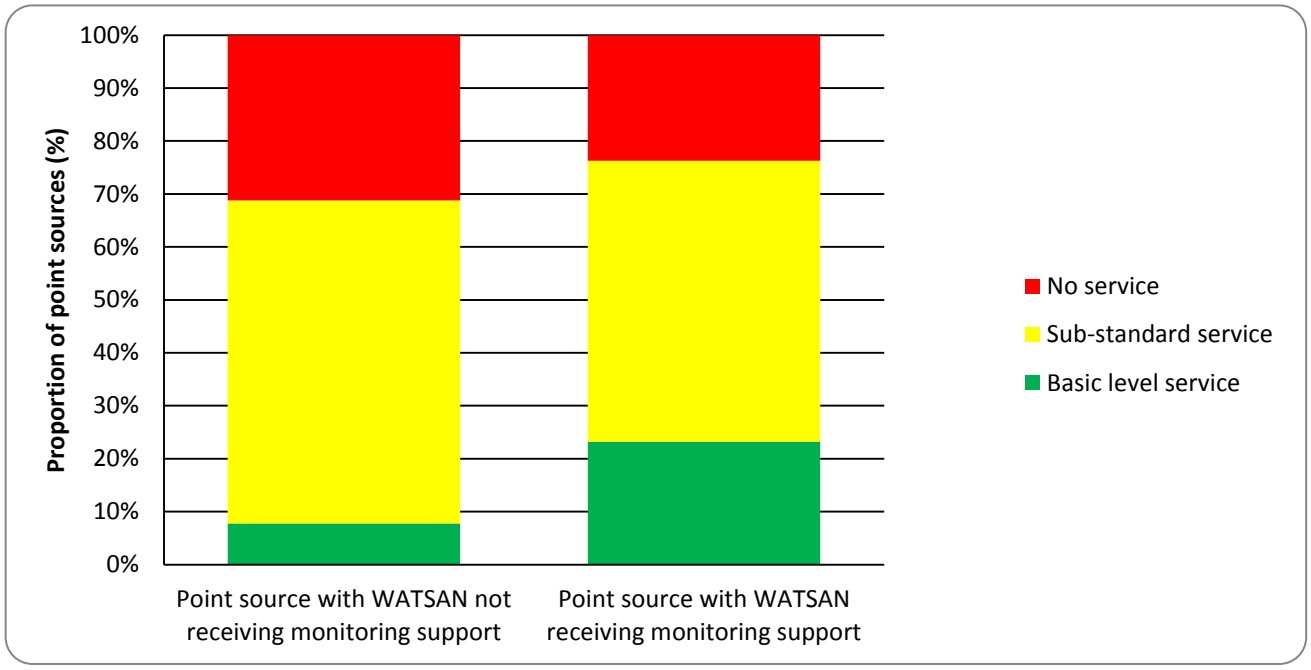
These are also the indicators for which a statistically significant positive correlation was found between the scores on these indicators and reliability of point sources. The exception is the indicator related to the composition of the WATSAN, for which no significant correlation was found between the score on this indicator and reliability.

Although there did not seem to be a statistically significant positive correlation between the WATSANs meeting the benchmark on indicator related to having a positive revenue–expenditure balance and WATSANs receiving monitoring support, WATSANs with monitoring support were found to have higher average (though not statistically significant) annual revenues (GHC136) than WATSANs without support (GHC103).

A negative correlation was found for the indicator related to water quality testing. This can be explained by the fact that the majority of WATSANs which received adequate monitoring support were located in Akatsi District, where quality sampling and analysis had not been undertaken. A relatively large negative correlation was also established for the tariff setting indicator. In order to meet the benchmark on this indicator, WATSANs have to set a tariff based on projected costs. However, when only considering whether or not a tariff has been set at all, 57% of WATSANs without support were found to have set a tariff compared with 84% for WATSANs who receive support, suggesting a strong positive correlation between tariff setting and support.

The (statistically significant) positive correlation between monitoring support and WATSAN scores was much stronger in Akatsi, where monitoring support had been stronger, than in the other two districts (as illustrated by the figures in Appendix 7.10b). As shown in the graph below, the percentage of point sources providing a basic level of service was also higher for point sources receiving monitoring support than for point sources which did not.

Figure 24: Percentage of point sources providing no, sub-standard or basic water services, for point sources managed by WATSAN receiving and WATSANs not receiving monitoring support



The number of WSDBs was too small to determine statistically significant differences in average scores between WSDBs with and WSDBs without monitoring support (see Appendix 7.12).

7.3 Summing up correlations

Point sources not managed by WATSANs were often found to be as reliable as point sources managed by WATSANs. Reliability of point sources was especially low for the ones managed by WATSANs which did not meet the benchmark on the service provider indicators. Overall, the evidence suggests that point sources tend to be more reliable when managed by an entity other than a WATSAN than when managed by a badly functioning WATSAN.

Better managed point sources (those with higher average service provider scores) seem more likely to provide reliable services, while the management of the point source has little to no impact on the distance between facility and users, perceived water quality and water use quantities. Better managed point sources do seem to be more likely to be crowded though.

Point sources managed by a WATSAN with good access to *spare parts*, a good record of *periodic maintenance*, a *positive revenue and expenditure balance* and good *financial management* are more likely to provide reliable services than ones that do not. WATSANs that receive monitoring support from the service authority are more likely to be *well constituted* and to do well on access to *spare parts*, *periodic maintenance* and *financial management*.

The direction of the causality cannot be determined from the available data. For example, the positive correlation between the indicator relating to a positive revenue-expenditure balance and point source reliability can either mean that surplus revenues (over expenditure) result in better-managed and thus more reliable point sources, or that reliable point sources generate higher revenues, outweighing any expenditures. A dual relationship involving both of these situations is, of course, also possible. More research and analysis is needed to establish the causal relationship(s) more robustly. However, in general it seems that monitoring support can lead to better spare parts supply, periodic maintenance and financial management, which can lead in turn to more reliable water services.

The number of piped systems and WSDBs are too small to do a good analysis of the correlations around reliability. It was however clear that, whether managed by WSDBs or the GWCL, standpipe clusters connected to the GWCL scheme provided unreliable services.

8 Conclusions and recommendations

8.1 High non-compliance with national water service standards

This study has brought to light a high level of non-compliance with CWSA norms and standards at service provision level (level of service provided by point sources and piped schemes) as well as at water service provider (WATSANs and WSDBs) and service authority (district assembly) levels.

Reliability and service levels for point sources as well as piped schemes were found to be highest in Akatsi, which also has the highest coverage and highest level of support from the service authority (district assembly/ DWST) to their community-based service providers. Crowding of point sources was identified as an issue to be addressed in East Gonja.

Many WATSANs did not meet the service provider benchmarks. WATSANs scored especially low on corrective maintenance, water quality monitoring, financial management and tariff setting. WATSANs in East Gonja generally scored better on several operational indicators (most notably the water quality monitoring and corrective maintenance indicators) than the WATSANs in the other two districts.

Community-based piped scheme water service providers, WSDBs, scored generally lower than WATSANs in the same districts. Part of the reason for this could be that the higher benchmarks set for the WSDBs relative to those for the WATSANs.

With the exception of Akatsi, where monitoring support to point source and piped scheme service providers has been high, scores on the service authority function indicators were generally very low. That means that districts are hardy complying with their mandate of providing support to the community-based service providers, and often lack the capacity to do so.

8.2 Support, service provider performance and service levels

Interestingly, the level of services provided by point sources did not seem to be influenced by the mere presence or absence of a WATSAN Committee. Functionality and reliability of point sources managed by WATSANs was very similar to those for point sources which were not managed by WATSANs. However, point sources managed by well-performing WATSANs did have a higher reliability rate than those of low-scoring WATSANs. This positive correlation suggests that it is not the mere presence of the WATSAN which is key to the provision of sustainable water services, but having a well-performing one. Strengthening aspects of the service provider, particularly preventive maintenance, spare parts supply and financial management can have strong impacts on point source reliability and hence, the provision of sustainable services.

WATSANs which received monitoring support were more likely to be well-constituted, had quicker access to spare parts, were more likely to practice periodic maintenance and to have a bank account and petty cash. As mentioned above, this is expected to have a positive impact on the provision of reliable water services.

Different service delivery models were identified in respect of piped scheme water service provision. Four types of piped schemes were identified, based on their size and complexity. In addition, three different management models were identified: private management (of limited mechanised boreholes), GWCL management (of standpipes connected to the GWCL supply scheme) and community-based (WSDB) management (of limited mechanised boreholes, standpipes connected to the GWCL scheme, small community schemes and small town schemes). The functionality and reliability rates were found to be

higher in small community piped schemes, small town schemes and limited mechanised boreholes than in the schemes connected to the GWCL network. However, because of the small number of piped schemes, no statistically significant correlations could be established between WSDBs scoring high on the service provider indicators and the reliability of piped schemes.

8.3 Recommendations

8.3.1 Recommendations to improve service levels

In order to prevent crowding of point sources and standpipes, and in order to ensure that distances between facilities and users do not exceed 500 metres, implementation of additional infrastructure or expansion of existing facilities will be needed in some areas, especially in East Gonja. Considering the high number of broken down and non-functioning point sources, the possibility of rehabilitation of existing facilities, in addition to the installation of new facilities, needs to be explored in the three districts.

In order to ensure that these capital/maintenance expenditures will result in sustainable water services, community-based service providers have to be put in place systems which facilitate efficient access to spare parts. They also need to perform regular preventive maintenance and practise efficient financial management to ensure that funds are readily available for maintenance purposes.

More attention should be given to the set-up and performance of community-based service providers for piped schemes, as they struggle with meeting the benchmarks. Different types of piped schemes have different management requirements and standards, which need to be reflected in the indicators used to monitor and regulate them.

More attention should be given to structural (instead of one-off) capacity building of community-based service providers (WATSANs and WSDBs especially) and supporting these through regular and proactive monitoring.

Regarding indicators of financial health, this study limited itself to the actual revenues and expenditure of community-based water service providers. It did not investigate whether or not these are sufficient to ensure the provision of sustainable water services. More research is needed on whether or not revenues are high enough to at least cover the operational and minor maintenance costs needed to sustain rural and small town water services. Further, the extent to which revenues can cover (part of) capital maintenance expenditures needed to sustain services, ought to be studied further, as well as other possible mechanisms for covering these costs.

In order for service authorities to properly take up their planning, supervisory, regulatory and support functions, they need to be strengthened in terms of resources and capabilities. The costs involved in providing such direct support services, which are needed to ensure sustainable water service provision, should be analysed and sources of funding and mechanisms to cover these costs (taxes, transfers and tariffs) explored, studied and discussed in the sector.

The above mentioned actions can result in less crowding, shorter distances between users and facilities (through the implementation and rehabilitation of moribund facilities) and the provision of more reliable services (through capacity building of and support to service providers), which can in turn have a positive effect on water use, which was found to be very low.

8.3.2 Recommendations related to the indicators and methodology:

For future use, some indicators used in this study will need to be reviewed, sharpened and possibly revised. Such an exercise is also necessary in order to harmonise the indicators with those in the DiMES framework. Further, the indicator set may benefit from some simplification to make routine monitoring a more affordable undertaking for districts.

For this study, functionality of point sources was defined based on a stroke and leakage test. However, multiple point sources failing one of the two tests (and therefore considered "partially functioning") and some of the ones failing both (and therefore considered "non-functional") were still perceived to be providing reliable services. It is therefore recommended that the sector discusses and agrees on a standard, more practical definition of functionality.

The method of determining water use quantities needs to be revised and harmonised as much as possible between point sources and piped schemes.

For this baseline data collection exercise, data has been collected from community-based service providers and service authorities. Data was not collected from households. In order to cross-check the data and in order to collect perceptions related to user satisfaction, it is recommended that a follow-up survey include a data collection module for the household level.

The same indicators were used for service providers managing different types of piped schemes, with different sizes and levels of complexity. The sector should agree on different service delivery models for these different schemes, with clear norms, standards and guidelines for the management of these schemes. Service provider indicators will have to be developed or adjusted accordingly.

The indicator relating to *political interference* needs to be reviewed. This indicator is currently scored on a 0-50-100 scale, with the vast majority of service providers scoring 100. The question is whether or not this reflects the reality on the ground and whether the indicator is more meaningful around periods of transition from one WSMT to the next.

The indicator relating to *tariff setting* should be reviewed. The mere presence of a tariff seems to have a positive effect on the reliability of point sources. Therefore, it could be argued that that should be the benchmark, rather than having a tariff based on projected costs as the benchmark. If accepted, having a tariff based on projected costs could be taken as exceeding the benchmark.

The *service authority indicators* should be critically reviewed, as hardly any of the benchmarks were met. A discussion should be held on whether this was because the benchmarks were set too high or because there are serious issues regarding the performance of the service authorities (DWSTs), or both.

For this study, facilities (which are geographical points) have been used as the starting point. The level of service provided by the facilities and the management of the facilities was assessed. However, it could be argued that it could be more valuable to rather assess the level of service provided in a certain (geographical) area. In this study this was done to some extent, through determining the proportion of facilities and service providers meeting benchmarks on the service level and service provider indicators. In future, however, sampling smaller geographical areas, like area councils or communities, as the unit of analysis and the use of average or aggregate scores for these geographical areas, could be further explored.

Key messages:

There is high level of non-compliance with community water norms, standards and guidelines, both at service provision level, water service provider (WATSANs and WSDBs) level and at service authority (district) level.

Functionality is higher for piped schemes than for point sources. About a third of the point sources in the three study districts were not functioning well (either broken down or failing the stroke and leakage test), while the majority of piped schemes in the three study districts were functioning.

The majority of water supply facilities do not provide a basic level of service, as per the standards set by CWSA. The water supply facilities in the three study districts provide basic services only to about 20% of the people which they serve.

Point sources managed by a WATSAN did not necessarily provide higher levels of service than point sources not managed by WATSANs. However, point sources managed by WATSANs with adequate preventive maintenance, spare parts supply and financial management do provide more reliable services.

Although tariffs are relatively high (far higher than the tariff charged by the Ghana Water Company Ltd), annual revenues are much lower than expected, based on an assumed utilisation rate of 18-20 lpcd by all users. This is due to low consumption levels and/or high rates of non-revenue water. Therefore, revenue levels, though generally high enough to cover current annual expenditures, are likely to be too low to cover operational and minor maintenance costs and costs of capital maintenance expenditure needed to sustain at least basic level water services.

Support to community-based service providers, in the form of monitoring their performance and providing technical support, which is generally sub-standard at the moment, can lead to better performing community-based service providers, which can in turn lead to more reliable and hence higher levels of services.

References

Abrams, L., Palmer, I., and Hart, T., 1998. Sustainability Management Guidelines. Pretoria: Department of Water Affairs and Forestry.

Akatsi DWST, 2011. District Water and Sanitation Plan.

Community Water and Sanitation Agency (CWSA) and IRC International Water and Sanitation Centre, 2012. Draft indicators for sustainable rural water supply services in Ghana. Available from: http://www.waterservicesthatlast.org/Media/Files/draft_indicators_for_evaluating_sustainable_rural_water_services_in_ghana

Community Water and Sanitation Agency (CWSA) Regulations, 2011. Legislative Instrument. Community Water and Sanitation Agency, Accra, Ghana

Community Water and Sanitation Agency (CWSA), 2011. Status of Rural Water and Sanitation in Ghana, Presentation at the 3rd Ghana Water Forum at College of Physicians and Surgeons, Accra 5-7, September 2011.

Community Water and Sanitation Agency (CWSA), forthcoming-a. Small Communities Sector Guidelines, Design Guidelines, Community Water and Sanitation Agency

Community Water and Sanitation Agency (CWSA), forthcoming-b. Small Town Sector Guidelines, Design Guidelines, Community Water and Sanitation Agency

Community Water and Sanitation Agency (CWSA), Northern Region, 2011. Annual Report

Evans, P., 1992. Paying the piper: an overview of community financing of water and sanitation. Delft: IRC International Water and Sanitation Centre.

Komives, K. Akanbang, B. Thorsten, R. Tuffuor B, Jeuland, M. Wakeman, W. Larbi, E. Bakalian, A. Whittington, D., 2006. Post-construction Support Activities and the Sustainability of Rural Water Projects in Ghana, Available from: http://www.webmeets.com/files/papers/ERE/WC3/645/Komives%20Ghana%20RWS%20Kyoto%20submission.pdf

Lockwood, H. and A. Le Gouais. 2011. Service delivery indicators and monitoring to improve sustainability of rural water supplies. Triple-S Building Block Briefing Note Series. The Hague: IRC International Water and Sanitation Centre.

Lockwood, H. and Smits, S. 2011. Lessons for Rural Water Supply: Moving towards a Service Delivery Approach, IRC International Water and Sanitation Centre, The Hague and Aguaconsult, Wivenhoe. Available from: http://www.waterservicesthatlast.org/index.php/Resources/Multi-country-synthesis

Lockwood, H., Smits, S. Schouten, T. and Moriarty, P. 2010. Providing Sustainable Water at Scale, A paper presented at International Symposium on Rural Water Services, Kampala

MLGRD, 2008. A Public – Private Partnership Programme between Ministry of Local Government and Rural Development and Maks Publications & Media Services © 2006. Available from: http://www.ghanadistricts.com/districts/?r=10&_=160&sa=6224

Moriarty, P., Batchelor, C., Fonseca, C., Klutse, A., Naafs, A., Nyarko, A., Pezon, K., Potter, A., Reddy, R. and Snehalata, M., 2010. Ladders and levels for assessing and costing water service delivery. WASHCost working paper No. 2. The Hague: IRC International Water and Sanitation Centre. Available from: http://www.washcost.info/page/842

Nyarko, K.B., Dwumfour-Asare, B., Appiah-Effah, E., Moriarty, P., and Obuobisa-Darko, A., 2011. Life-cycle costs in Ghana, Briefing Note 2: Post-construction costs of water point-systems. WASHCost briefing note. IRC International Water and Sanitation Centre, The Hague, The Netherlands

Rural Water Supply Network (RWSN), 2009. Myths of the Rural Water Supply Sector, Perspectives No. 4, RWSN Executive Steering Committee, July 2009. St Gallen: Rural Water Supply Network. Available from: http://www.rwsn.ch.

Sunyani West District Assembly (SWDA), 2010. Draft District Medium Term Development Plan 2010-2013, Sunyani West District Assembly.

Sunyani West District Assembly (SWDA), 2010. Draft District Water and Sanitation Profile, 2010. Sunyani West District Assembly

Verdamato, T., De la Harpe, J., Adank, M., and Moriarty, P., 2011. Ghana: Lessons for Rural Water Supply. Assessing progress towards sustainable service delivery. The Hague: IRC International Water and Sanitation Centre, and Wivenhoe: Aguaconsult

Volta Region Community Water and Sanitation Agency, 2010. Annual Report, Water Services That Last (2012) Service Delivery Models, Water services that last website. Available from: http://www.waterservicesthatlast.org/Resources/Concepts-tools/Service-delivery-models

Annex: Scoring tables

WATSAN scoring tables

A well-qualified, trained and experienced gender balanced WATSAN is in place

Score	Narrative description	Akatsi (n=109)	East Gonja (n=51)	Sunyani West (n=28)	Grand Total (n=288)
0	The composition of the WATSAN committee is not in line with the CWSA guidelines (Gender Balance (less than 30% women) and / or no separated cashiering function and caretaking function and / or vendors are not engaged at each water point)	24 (22%)	35 (69%)	20 (71%)	79 (42%)
25	There is a WATSAN committee , which has been composed in line with the CWSA guidelines (Gender Balance (less than 30% women), separated cashiering function and caretaking function, vendors engaged at each water point), but the WATSAN has not received initial training	27 (25%)	0 (0%)	2 (7%)	29 (15%)
50	**Benchmark:** There is a WATSAN committee. Its composition is in line with the CWSA guidelines (Gender Balance (at least 30% women); separated cashiering function and caretaking function; Vendors are engaged at each water point) and it has received initial training	58 (53%)	14 (27%)	5 (18%)	77 (41%)
75	There is a WATSAN committee. Its composition is in line with the CWSA guidelines and its members have received refresher training on an irregular basis	0 (0%)	2(4%)	1 (4%)	3 (2%)
100	There is a WATSAN committee. Its composition is in line with the CWSA guidelines and its members have received refresher training on at least bi-annual basis	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Average score		33	17	13	26

Technical, Administrative and financial Reports are kept and read out to the Community at least once every six months

Score	Narrative description	Akatsi (n=109)	East Gonja (n=51)	Sunyani West (n=28)	Grand Total (n=288)
0	Account books are not kept	48 (44%)	20 (39%)	11 (39%)	79 (42%)
25	Account books are kept, but are more than a month	16 (15%)	5 (10%)	5 (18%)	26 (14%)

	behind, or are not shared with the community				
50	Account books are kept and up-to-date, and shared with the community, but less than once every six months	10 (9%)	2 (4%)	0 (0%)	12 (6%)
75	Account books are kept and are up-to-date, and are shared with the community, at least every six months, but maintenance records are not kept	7 (6%)	7 (14%)	5 (18%)	19 (10%)
100	Account books are kept and are up-to-date, and are shared with the community, at least every six months, and maintenance records are kept	28 (26%)	17 (33%)	7 (25%)	52 (28%)
Average score		39	48	43	42

There is no political and chieftaincy influences in the composition of the WATSAN or WSDB

Score	Narrative description	Akatsi (n=109)	East Gonja (n=51)	Sunyani West (n=28)	Grand Total (n=288)
0	There is was a change in WSDBs and WATSANs members and this change was influenced by political or chieftaincy	0%	0%	1 (4%)	1 (1%)
100	There was no change in WSDBs and WATSANs members, or when change has taken place, this has been because of by performance considerations (or re-election)	109 (100%)	51 (100%)	27 (96%)	187 (99%)
Average score		100	100	96	99

Spare parts are available to enable maintenance within 24 hours

Score	Narrative description	Akatsi (n=109)	East Gonja (n=51)	Sunyani West (n=28)	Grand Total (n=288)
NA	Never acquired spare parts	39	6	6	51
0	It takes longer than 3 days to acquire spare parts	38 (54%)	24 (53%)	16 (73%)	78 (57%)
50	It takes less than 3 days to acquire spare parts	24 (34%)	15 (33%)	6 (27%)	45 (33)
100	It takes less than 24 hours to acquire spare parts	8 (11%)	6 (13%)	0 (0%)	14 (10%)
Average score		29	30	14	27

Area mechanics are available to enable maintenance within 24 hours

Score	Narrative description	Akatsi (n=109)	East Gonja (n=51)	Sunyani West (n=28)	Grand Total (n=288)
NA	Never acquired services of area mechanic	36	17	5	58
0	It normally takes longer three days to acquire the services of an area mechanic	29 (40%)	12 (35%)	13 (57%)	54 (42%)
50	It normally takes less than three days to acquire the services of an area mechanic	31 (42%)	18 (53%)	5 (22%)	54 (42%)
100	It normally takes less than 24hours to acquire the services of an area mechanic	13 (18%)	4 (12%)	5 (22%)	22 (17%)
Average score		39	38	33	38

Corrective maintenance is executed in an effective way

Score	Narrative description	Akatsi (n=109)	East Gonja (n=51)	Sunyani West (n=28)	Grand Total (n=288)
0	Corrective maintenance carried is not out, or when it is, it takes longer than 3 days	74 (68%)	18 (35%)	21 (75%)	113 (60%)
50	Corrective maintenance carried is out within 3 days	28 (26%)	22 (43%)	7 (25%)	57 (30%)
100	Corrective maintenance is carried out within 24 hours	7 (6%)	11 (22%)	0 (0%)	18 (10%)
Average score		19	43	13	25

Periodic maintenance is executed in an effective way

Score	Narrative description	Akatsi (n=109)	East Gonja (n=51)	Sunyani West (n=28)	Grand Total (n=288)
0	Periodic maintenance is not carried out	26 (24%)	9 (18%)	15 (54%)	50 (27%)
50	Periodic maintenance is carried out but less often than once a year	2 (2%)	3 (6%)	0 (0%)	5 (3%)
100	Periodic maintenance is carried out at least once a year	81 (74%)	39 (76%)	13 (46%)	133 (71%)
Average score		75	79	46	72

Water Quality Sampling and Analysis services are performed on half yearly basis by recognised institutions and paid for by each community through tariffs

Score	Narrative description	Akatsi (n=109)	East Gonja (n=51)	Sunyani West (n=28)	Grand Total (n=288)
0	Water Quality Sampling and Analysis not done by recognised institutions (GWCL, WRI, GSB, SGS or KNUST laboratories)	109 (100%)	15 (29%)	22 (79%)	146 (78%)
25	Water Quality Sampling and Analysis done by recognised institutions (GWCL, WRI, GSB, SGS or KNUST laboratories) less than once a year	0 (0%)	3 (6%)	1 (4%)	4 (2%)
50	Water Quality Sampling and Analysis done by recognised institutions (GWCL, WRI, GSB, SGS or KNUST laboratories) at least once a year	0 (0%)	32 (63%)	4 (14%)	36 (19%)
75	Water Quality Sampling and Analysis done by recognised institutions (GWCL, WRI, GSB, SGS or KNUST laboratories) at least on half yearly basis	0 (0%)	1 (2%)	1 (4%)	2 (1%)
100	Water Quality Sampling and Analysis done by recognised institutions (GWCL, WRI, GSB, SGS or KNUST laboratories) at least on half yearly basis and is paid for through the tariff	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Average score		0	34	11	11

Annual income from water sales exceeds total annual expenditure

Score	Narrative description	Akatsi (n=109)	East Gonja (n=51)	Sunyani West (n=28)	Grand Total (n=288)
0	No data	0 (0%)	0 (0%)	16 (57%)	16 (9%)
	No revenue or expenditure	35 (32%)	7 (14%)	2 (7%)	44 (23%)
	Annual income was not higher than annual expenditure	10 (9%)	12 (24%)	3 (11%)	25 (13%)
100	Annual income was higher than annual expenditure	64 (59%)	32 (63%)	7 (25%)	103 (55%)
Average score		59	63	25	55

There is sound financial management, accounting and auditing

Score	Narrative description	Akatsi (n=109)	East Gonja (n=51)	Sunyani West (n=28)	Grand Total (n=288)
0	There is no bank account	49 (45%)	28 (55%)	13 (46%)	90 (48%)
25	There is a bank account but WATSAN have no petty cash to its disposal	19 (17%)	13 (25%)	13 (46%)	45 (24%)
50	There is a bank account, WATSAN have petty cash to its disposal and there is no auditing	41 (38%)	10 (20%)	2 (7%)	53 (28%)
75	There is a bank account, WATSAN have petty cash to its disposal and auditing is carried out less than once in a year	0 (0%)	0 (0%)	0 (0%)	0 (0%)
100	There is a bank account, WATSAN have petty cash to its disposal and auditing is carried out at least once in a year	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Average score		23	16	15	20

Tariff setting is taking into account the lifecycle costs

Score	Narrative description	Akatsi (n=109)	East Gonja (n=51)	Sunyani West (n=28)	Grand Total (n=288)
0	There is no tariff set	12 (11%)	30 (59%)	9 (32%)	51 (27%)
25	There is a tariff set but not based on projected costs of operation and maintenance (vendor, spare part for minor maintenance)	92 (84%)	8 (16%)	10 (36%)	110 (59%)
50	There is a tariff set based on projected costs of operation and maintenance (vendor, spare part for minor maintenance) but the community and the MMDA have not accepted the ideal tariff calculated based on projected costs	0 (0%)	1 (2%)	0 (0%)	1 (1%)
75	There is a tariff set based on projected costs of operation and maintenance (vendor, spare part for minor maintenance) but the community and the MMDA have accepted the ideal tariff calculated based on projected costs; additional costs such as costs of replacement of hand pump have not been included in the tariff	5 (5%)	0 (0%)	5 (18%)	10 (5%)

100	There is a tariff set based on projected costs of operation and maintenance (vendor, spare part for minor maintenance) but the community and the MMDA have accepted the ideal tariff calculated based on projected costs; additional costs such as costs of replacement of hand pump have been included in the tariff	0 (0%)	12 (24%)	4 (14%)	16 (9%)
Average score		25	28	37	27

DWST monitors O&M of water facilities in terms of financial, technical and administrative performance, including periodic audits, and provides support where needed.

Score	Narrative description	Akatsi (n=109)	East Gonja (n=51)	Sunyani West (n=28)	Grand Total (n=288)
0	The DWST does not monitor O&M of water facilities in terms of financial, technical and administrative performance on a regular basis	13 (12%)	35 (69%)	25 (89%)	73 (39%)
25	The DWST monitors O&M of water facilities in terms of financial, technical and administrative performance on a regular basis but does not provide the direct support when needed	1 (1%)	2 (4%)	1 (4%)	4 (2%)
50	The DWST monitors O&M of water facilities in terms of financial, technical and administrative performance on a regular basis (but less than quarterly) and provides the direct support when needed	4 (4%)	3 (6%)	2 (7%)	9 (5%)
75	The DWST monitors O&M of water facilities in terms of financial, technical and administrative performance on a quarterly basis and provides the direct support when needed	91 (83%)	8 (16%)	0 (0%)	99 (53%)
100	The DWST monitors O&M of water facilities in terms of financial, technical and administrative performance on a quarterly basis, provides the direct support when needed and does periodic financial auditing	0%	3 (6%)	0%	2 (2%)
Average score		65	22	4	44

MMDA assists the community in case of major repairs and borehole rehabilitation

Score	Narrative description	Akatsi (n=109)	East Gonja (n=51)	Sunyani West (n=28)	Grand Total (n=288)
NA	There has not been the need for replacement or hand-pumps and redevelopment of boreholes.	97 (89%)	30 (59%)	15 (54%)	142 (76%)
0	When need arose, the MMDA did not support the community with replacement of hand-pumps or redevelopment of boreholes	10 (83%)	16 (76%)	10 (77%)	36 (87%)
50	When need arose, the MMDA supported the community with replacement of hand-pumps or redevelopment of boreholes, but not on the request of the community	0%	2 (10%)	0 (0%)	2 (4%)
100	When need arose, and the community requested support, the MMDA supported the community with replacement of hand-pumps or redevelopment of boreholes.	2 (17%)	3 (14%)	3 (23%)	8 (17%)
Average score		17	19	23	20

WSDB scoring tables

There is a WSDB, consisting a well-qualified and trained team

Score	Narrative description	Akatsi (n=6)	East Gonja (n=8)	Sunyani West (n=9)	Grand Total (n=23)
0	There is no WSDB, or the WSDB has less than half of the following positions: System manager, system operator, Administrative / Financial Clerk, Revenue Collector, Vendors for each standpipe.	0%	0%	5 (56%)	5 (22%)
25	There is a WSDB, with at least half of the following positions: System manager, system operator, Administrative / Financial Clerk, Revenue Collector, Vendors for each standpipe.	6 (100%)	8 (100%)	4 (44%)	18 (78%)
50	**Benchmark:** There is a gender balanced WSDB (with at least 1/3 women) with the following staff and qualifications, in line with the CWSA guidelines: - System Manager: at least Higher National Diploma (HND) or equivalent academic qualification and shall have good oral and	0%	0%	0%	0%

	communication skills. - Operator: technical National Vocational Training Institute (NVTI) qualification – electrical or mechanical. - Administrative/Financial Clerk: at least RSA stage II or equivalent. - Revenue Collector: at least Senior Secondary School Certificate Examination (SSSCE)				
75	There is a gender balanced WSDB (with at least 1/3 women) with a System manager, system operator, Administrative / Financial Clerk, Revenue Collector, Vendors for each standpipe. All WSDB members have the minimum educational level as described by the CWSA guidelines and its members have received refresher training on less than an annual basis	0%	0%	0%	0%
100	There is a gender balanced WSDB (with at least 1/3 women) with a System manager, system operator, Administrative / Financial Clerk, Revenue Collector, Vendors for each standpipe. All WSDB members have the minimum educational level as described by the CWSA guidelines and its members have received refresher training on at least annual basis	0%	0%	0%	0%
Average score		25	25	11	20

Technical, Administrative and Financial Reports are kept and read out to the Community at least once every six months

Score	Narrative description	Akatsi (n=6)	East Gonja (n=8)	Sunyani West (n=9)	Grand Total (n=23)
0	Account books and are not kept	0%	2 (25%)	4 (44%)	6 (26%)
25	Account books are kept, but are more than a month behind, or are not shared with the community	1 (17%)	2 (25%)	2 (22%)	5 (22%)
50	Account books are kept and up-to-date, and shared with the community, but less than once every six months	2 (17%)	3 (38%)	2 (22%)	7 (30%)
75	Account books are kept and are up-to-date, and are shared with the community, at least every six months, but maintenance records are not kept	1 (33%)	1 (13%)	0 (0%)	2 (9%)
100	Account books are kept and are up-to-date, and are shared with the community, at least every six months, and maintenance records are kept	2 (33%)	0 (0%)	1 (11%)	3 (13%)

Average score				

There is no political and chieftaincy influences in the composition of the WSDB

Score	Narrative description	Akatsi (n=6)	East Gonja (n=8)	Sunyani West (n=9)	Grand Total (n=23)
0	There is was a change in WSDBs members and this change was influenced by political or chieftaincy	0 (0%)	1 (13%)	0 (0%)	1 (4%)
100	There was no change in WSDBs members, or when change has taken place, this has been because of by performance considerations (or re-election)	6 (100%)	7 (88%)	9 (100%)	22 (96%)
Average score		100	88	100	96

WSDB meetings are organised regularly and minutes are kept

Score	Narrative description	Akatsi (n=6)	East Gonja (n=8)	Sunyani West (n=9)	Grand Total (n=23)
0	The WSDB does not meet	1 (17%)	0 (0%)	0 (0%)	1 (4%)
25	The WSDB meets less than every 6 months, or if it meets more often, the system manager does not attend the meetings	0 (0%)	2 (25%)	0 (0%)	2 (9%)
50	The WSDB meets at least every 6 months and the system manager attends the meetings	1 (17%)	3 (38%)	5 (56%)	9 (39%)
75	The WSDB meets at least every 6 months, the system manager attends the meetings and minutes are kept	0 (0%)	0 (0%)	0 (0%)	0 (0%)
100	The WSDB meets at least every 3 months, the system manager attends the meetings and minutes are kept	4 (67%)	3 (38%)	4 (44%)	11 (48%)
Average score		75	63	72	70

The private sector provides the needed support to the WSDB

Score	Narrative description	Akatsi (n=6)	East Gonja (n=8)	Sunyani West (n=9)	Grand Total (n=23)
0	There are no spare parts available and is there is no	0 (0%)	2 (25%)	4 (44%)	6 (26%)

	private sector available to carry out maintenance				
25	Some spare parts and private sector is available to carry out maintenance	3 (50%)	5 (63%)	3 (33%)	11 (48%)
50	All needed support from private sector and spare parts are available, but it takes longer than 48 hours to acquire these	0 (0%)	1 (13%)	2 (22%)	3 (13%)
75	All needed support from private sector and spare parts are available within 48 hours	3 (50%)	0 (0%)	0 (0%)	2 (13%)
100	All needed support from private sector and spare parts are available within 24 hours	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Average score		50	22	19	28

The WSDB prepares a work plan and budget for O&M and executes maintenance accordingly

Score	Narrative description	Akatsi (n=6)	East Gonja (n=8)	Sunyani West (n=9)	Grand Total (n=23)
0	WSDB does not prepare a maintenance schedule	6 (100%)	7 (88%)	6 (67%)	19 (83%)
25	WSDB does prepare a maintenance schedule	0 (0%)	0 (0%)	0 (0%)	0 (0%)
50	WSDB undertakes planned routine and periodic maintenance according to the maintenance schedule	0 (0%)	0 (0%)	2 (22%)	2 (9%)
75	WSDB undertakes planned routine and periodic maintenance according to the maintenance schedule and the construction consultant has prepared system specific O&M manuals , which has been submitted to the community / WSDB	0 (0%)	1 (13%)	0 (0%)	1 (4%)
100	WSDB undertakes planned routine and periodic maintenance according to the maintenance schedule and the construction consultant has prepared system specific O&M manuals , which has been submitted to the community / WSDB and relevant staff has been trained in the effective use of the manuals	0 (0%)	0 (0%)	1 (11%)	1 (4%)
Average score		0	9	22	12

Water Quality Sampling and Analysis services are performed on half yearly basis by recognised institutions and paid for by each community through tariffs

Score	Narrative description	Akatsi (n=6)	East Gonja (n=8)	Sunyani West (n=9)	Grand Total (n=23)
0	Water Quality Sampling and Analysis not done by recognised institutions (GWCL, WRI, GSB, SGS or KNUST laboratories)	3 (50%)	6 (75%)	8 (89%)	17 (74%)
25	Water Quality Sampling and Analysis done by recognised institutions (GWCL, WRI, GSB, SGS or KNUST laboratories) less than once a year	1 (17%)	0 (0%)	0 (0%)	1 (4%)
50	Water Quality Sampling and Analysis done by recognised institutions (GWCL, WRI, GSB, SGS or KNUST laboratories) at least once a year	1 (17%)	0 (0%)	1 (11%)	2 (9%)
75	Water Quality Sampling and Analysis done by recognised institutions (GWCL, WRI, GSB, SGS or KNUST laboratories) at least on half yearly basis	1 (17%)	1 (13%)	0 (0%)	2 (9%)
100	Water Quality Sampling and Analysis done by recognised institutions (GWCL, WRI, GSB, SGS or KNUST laboratories) at least on half yearly basis and is paid for through the tariff	0 (0%)	1 (13%)	0 (0%)	1 (4%)
Average score		25	22	6	16

Annual income from water sales exceeds total annual expenditure

Score	Narrative description	Akatsi (n=6)	East Gonja (n=8)	Sunyani West (n=9)	Grand Total (n=23)
0	No data	0 (0%)	2 (25%)	8 (89%)	10 (43%)
	Annual income was not higher than annual expenditure	1 (17%)	1 (13%)	0 (0%)	2 (9%)
100	Annual income was higher than annual expenditure	5 (83%)	5 (63%)	1 (11%)	11 (48%)
Average score		83	63	11	48

There is sound financial management, accounting and auditing

Score	Narrative description	Akatsi (n=6)	East Gonja (n=8)	Sunyani West (n=9)	Grand Total (n=23)

0	There is no operational account	0 (0%)	2 (25%)	5 (56%)	7 (30%)
25	There is an operational account	6 (100%)	3 (38%)	3 (33%)	12 (52%)
50	There is an operational and a capital account, in which at least 20% of the net revenues is deposited	0 (0%)	3 (38%)	1 (11%)	4 (17%)
75	There is an operational and a capital account, in which at least 20% of the net revenues is deposited, and there is a sanitation account	0 (0%)	0 (0%)	0 (0%)	0 (0%)
100	There is an operational and a capital account, in which at least 20% of the net revenues is deposited, and there is a sanitation account and auditing is carried out at least once in a year	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Average score		25	28	14	22

Tariff setting is taking into account the lifecycle costs

Score	Narrative description	Akatsi (n=6)	East Gonja (n=8)	Sunyani West (n=9)	Grand Total (n=23)
0	Costs have not been taken in account in the budget and tariffs	6 (100%)	8 (100%)	5 (56%)	19 (83%)
25	Some of the water production and distribution costs and maintenance and repair costs have been considered in the establishment of the budget and tariff	0 (0%)	0 (0%)	0 (0%)	0 (0%)
50	All water production and distribution costs and maintenance and repair costs have been considered in the establishment of the budget and tariff and the community and the MMDA have accepted the ideal tariff calculated based on projected costs	0 (0%)	0 (0%)	2 (22%)	2 (9%)
75	All water production and distribution costs and maintenance and repair costs have been considered in the establishment of the budget and tariff and the community and the MMDA have accepted the ideal tariff calculated based on projected costs. Replacement costs and rehabilitation and expansion costs have been taken into consideration into the establishment of the tariff as well	0 (0%)	0 (0%)	2 (22%)	2 (9%)
100	All water production and distribution costs and maintenance and repair costs have been considered in the establishment of the budget and tariff and the	0 (0%)	0 (0%)	0 (0%)	0 (0%)

	community and the MMDA have accepted the ideal tariff calculated based on projected costs. Replacement costs and rehabilitation and expansion costs, and allocation to the sanitation fund have been taken into consideration into the establishment of the tariff as well				
Average score		0	0	28	11

DWST monitors O&M of water facilities in terms of financial, technical and administrative performance, including periodic audits, and provides support where needed.

Score	Narrative description	Akatsi (n=6)	East Gonja (n=8)	Sunyani West (n=9)	Grand Total (n=23)
0	The DWST does not monitor O&M of water facilities in terms of financial, technical and administrative performance on a regular basis	0 (0%)	7 (88%)	6 (67%)	13 (57%)
25	The DWST monitors O&M of water facilities in terms of financial, technical and administrative performance on a regular basis but does not provide the direct support when needed	0 (0%)	1 (13%)	0 (0%)	1 (4%)
50	The DWST monitors O&M of water facilities in terms of financial, technical and administrative performance on a regular basis (but less than quarterly) and provides the direct support when needed	0 (0%)	0 (0%)	1 (11%)	1 (4%)
75	The DWST monitors O&M of water facilities in terms of financial, technical and administrative performance on a quarterly basis and provides the direct support when needed	5 (83%)	0 (0%)	2 (22%)	7 (30%)
100	The DWST monitors O&M of water facilities in terms of financial, technical and administrative performance on a quarterly basis, provides the direct support when needed and does periodic financial auditing	1 (17%)	0 (0%)	0 (0%)	1 (4%)
Average score		79	3	22	30

Service authority / Support indicators:

There is a well-resourced DWST, consisting of at least 3 well-qualified and experienced staff members, receiving the needed support by CWSA and MMDA

Score	Narrative description	Akatsi	East Gonja	Sunyani West
0	There is no DWST or it consists of less than 3 members	√		
25	There is a DWST, consisting of 3 members, but is not sufficiently resources in order to do their jobs		√	√
50	There is a DWST, which is sufficiently resourced in order to do their job			
75	There is a DWST, which is sufficiently resourced in order to do their job and received irregular retaining			
100	There is a DWST, which is sufficiently resources in order to do their job and is regularly retained			

There are efficient monitoring and data flows

Score	Narrative description	Akatsi	East Gonja	Sunyani West
0	No MOM (monitoring operation and maintenance) data is collected.			√
25	Some data is collected by the DWST or when all data are collected, these are not submitted to the regional CWSA office	√	√	
50	DWST submits MOM reports to the regional CWSA office.			
75	DWST submits MOM reports to the regional CWSA office on a quarterly basis.			
100	DWST submits quarterly MOM reports to the regional CWSA office. The data is used for district and regional level planning.			

Districts are able to allocate and utilise financial resources for water and sanitation services.

Score	Narrative description	Akatsi	East Gonja	Sunyani West
0	There is no budget allocation for water supply investment			√
25	There is budget allocation for operational costs related to water supply		√	
50	There is budget allocation for operational costs and for water supply investment	√		
75	There is budget allocation for water supply investment and at least 70% of the annual investment budget is spent. Furthermore, there is a budget for operational costs.			
100	There is budget allocation for water supply investment and at least 70% of the annual investment budget is spent. Furthermore, there is a budget for operational costs and at least 80% of the operational budget is used.			

By-laws for the WATSANs and WSDBs exist and are enforced effectively

Score	Narrative description	Akatsi	East Gonja	Sunyani West
0	There is no facility management plan that spells out the rules for the		√	

	WATSANs/WSDBs			
25	There is a facility management plan that spells out the rules for the WATSANs/WSDBs	√		√
50	There is a facility management plan that spells out the rules for the WATSANs/WSDBs, which is updated annually			
75	There is a facility management plan that spells out the rules for the WATSANs/WSDBs, which is updated annually and there are by-laws for WATSANs and WSDBs which are published and gazetted			
100	There is a facility management plan that spells out the rules for the WATSANs/WSDBs, which is updated annually and there are by-laws for WATSANs and WSDBs which are published and gazetted and enforced effectively.			

NGOs and CSOs providing water facilities do so in coordination with the MMDA

Score	Narrative description	Akatsi	East Gonja	Sunyani West
0	Less than 80% of NGOs inform the DA about implementation activities through providing facility data on new systems.		√	√
25	At least 80% of NGOs inform the DA about implementation activities through providing facility data on new systems.			
50	At least 80% of NGOs inform the DA about implementation activities through providing facility data on new systems and at least 80% van NGOs align their implementation to the DWSP			
75	At least 80% of NGOs inform the DA about implementation activities through providing facility data on new systems and at least 80% van NGOs align their implementation to the DWSP. Furthermore, the DWST tries to ensure that NGO activities are in line with CWSA standards, norms and guidelines.	√		
100	At least 80% of NGOs inform the DA about implementation activities through providing facility data on new systems and at least 80% van NGOs align their implementation to the DWSP. Furthermore, the DWST ensures that all NGO activities are in line with CWSA standards, norms and guidelines.			