

# Service Levels and Sustainability of water supply in Akatsi District, Volta Region, Ghana.



## Baseline Report

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an initiative of IRC



**triple-s**  
WATER SERVICES THAT LAST



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**Front page photo**

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## About Triple-S Project

The Sustainable Services at Scale (Triple-S) is a six year (2009 – 2014) multi-country learning project to improve rural water by transforming the current piecemeal approach into the provision of planned and integrated water services. Triple-S is an initiative of IRC International Water and sanitation Centre. Its aim is to move from project based, one-off construction of water supply systems to indefinitely sustainable rural water services delivered at scale. It seeks to tackle long-term challenges of sustainable water supply by contributing to a shift from infrastructure provision to **service delivery approach** for **rural and small town water** sector through action research, facilitating sharing and sector learning, working with government and sector stakeholders to enhance coordination and harmonization within the sector.

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 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, 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).



## Acknowledgement

We are profoundly indebted to the Akatsi District Assembly for their cooperation and invaluable contribution throughout the data collection, analysis and report writing of the baseline study.

Special thanks go to the leadership of the Assembly, particularly the District Chief Executive and the Presiding members for their sustained interest and inspiration throughout the entire process of the data collection. We would also want to acknowledge the DWST and the EHAs for their energies, time and commitment during the process. They were the pillar behind the success of the process and deserve commendation.

Finally, we wish to acknowledge the immense time and effort of the regional office of the Community Water and Sanitation Agency. The Monitoring of Operations and maintenance (MOM) unit and the Regional Director made time to go through the draft report and made very useful contributions.

## Executive summary

This report is the result of a baseline on water facility functionality tracking, assessment of service levels and performance of service providers and service authorities in Akatsi District in the Volta Region. The main objective of this report is to identify strengths and weakness in the delivery of sustainable water services, comparing the existing situation with standards, norms and guidelines for service delivery.

As a precursor for objective and effective assessment of the existing situation regarding functionality, service levels and performance of service providers and authority, a set of indicators were developed based on CWSA norms, standards and guidelines. This included indicators on:

- Point source and piped scheme functionality
- Service level provided by the facility point sources and piped systems (based on reliability, accessibility (in terms of crowding and distance between facility and users), 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.

From November to the end of December 2011, baseline data was collected from 249 hand pumps, 6 piped systems, 111 WSMTs for point sources, 6 WSMTS for piped systems and 87 stand pipes in Akatsi District in order to score and benchmark facilities, service providers and service authorities against these indicators. The data collection was carried out by the District Water and Sanitation Team (DWST) and Environmental Health Assistants (EHAs) at the District Assembly seconded to the DWST.

Analysis of the data showed that, about a third of the hand pumps were not functioning (either broken down completely or failed both stroke and leakage tests), while all the piped systems in the District were functioning.

Data obtained from the study provided very little information for effective determination of service levels of the piped systems. On the other hand there was adequate data for determination of service levels for hand pumps. About a tenth of all the hand pumps in Akatsi District met the benchmark on all indicators for service levels, providing 20liters of water at Ghana standards Authority quality standards, serving 300 or less people, located within 500meters of distance and functioning 95% of the time).

Most of the WSMTs for both point sources and piped systems performed poorly on indicators relating to financial both financial management and operations, but did quite well on support received from the Service Authority. It was quite in triggling to realize that, the good level of support received by WSMTs was not reflecting in their performance.

The Akatsi District Assembly scored very low on most of the indicators relating the performance of their functions. Except for budgeting and resource allocation and NGO coordination, the assembly did not meet benchmarks for the rest of the indicators.

Putting together the functionality scores, service level score and performance of the service providers on the financial management and operations indicators and level of support from the District Assembly, it is quite obvious that, most of the water facilities in the District are currently not sustainable.



# Table of Contents

<b>Acknowledgement</b> .....	<b>iii</b>
<b>Executive summary</b> .....	<b>iv</b>
<b>1 Introduction and background</b> .....	<b>1</b>
<b>1.1</b> Outline of this document .....	2
<b>2 Conceptual framework and methodology</b> .....	<b>3</b>
2.1.1 Functionality .....	3
2.1.2 Defining sustainable water services and indicators for measuring this .....	4
2.1.3 Service level indicators .....	5
2.1.4 Service provider and service authority indicators .....	7
<b>2.2</b> Methodology .....	8
2.2.1 Development of indicators .....	9
2.2.2 Scope .....	9
2.2.3 Data collection .....	9
2.2.4 Quality assurance, analysis and report writing .....	10
2.2.5 Limitations .....	10
<b>3 Introduction to the focus district</b> .....	<b>12</b>
<b>4 Results: Water Facilities</b> .....	<b>13</b>
<b>4.1</b> 4.1 Overview of water facilities .....	13
<b>4.2</b> Point Sources .....	13
<b>4.3</b> Functionality of hand pumps .....	16
<b>4.4</b> Service level indicators .....	18
4.4.1 Reliability .....	18
4.4.2 Crowding .....	19
4.4.3 Distance .....	19
4.4.4 Quality .....	20
4.4.5 Quantity .....	21
4.4.6 Service level score .....	22
<b>4.5</b> Piped systems .....	22
4.5.1 Overview of pipe systems .....	22
4.5.2 Functionality .....	22
<b>4.7</b> Service Level Indicators .....	23
4.7.1 Reliability .....	23
4.7.2 Crowding .....	23
4.7.3 Distance .....	23
4.7.4 Quality .....	23
4.7.5 Quantity .....	23
<b>4.8</b> Presence of Water meters .....	24
<b>5 Results: Performance of service provider</b> .....	<b>25</b>
<b>5.1</b> Overview of performance of WSMTs for small communities .....	25



5.1.1	Governance.....	25
5.1.2	Financial management, Accounting and Auditing.....	26
5.1.3	Performance of point source WSMTs on Operations.....	27
5.1.4	Support Received by WSMTs from DWST .....	29
<b>5.2</b>	<b>Service Provider: Water and Sanitation Management Teams for small towns.....</b>	<b>30</b>
5.2.1	Overview of small town WSMT Performance.....	30
5.2.2	Governance and general management .....	30
5.2.3	Operations of WSMTs.....	32
5.2.4	Financial management.....	32
5.2.5	Support received by the small town WSMTs from DWST .....	33
<b>6</b>	<b>Results: Performance of service authority.....</b>	<b>34</b>
<b>6.1</b>	Presence of DWST.....	34
<b>6.2</b>	Monitoring and data flow .....	34
<b>6.3</b>	District level budget allocation and utilization .....	34
<b>6.4</b>	Facility management plans and by-laws .....	34
<b>6.5</b>	Coordination of NGOs.....	34
<b>7</b>	<b>Results: how do support, service provider and service level indicators relate to each other?    35</b>	
<b>7.1</b>	Presence WSMTs and Hand pump functionality .....	35
<b>7.2</b>	Records keeping and hand pump Functionality .....	35
<b>7.3</b>	Relationship between preventive maintenance and functionality.....	36
<b>7.4</b>	Functionality and revenue .....	37
<b>7.5</b>	Support and functionality .....	37
<b>7.6</b>	Records keeping and reliability.....	38
<b>7.7</b>	Support and composition of WSMTs .....	39
<b>7.8</b>	Support and Records Keeping.....	39
<b>7.9</b>	Records Keeping and Revenue mobilization.....	40
<b>7.10</b>	Support and Revenue mobilization.....	41
<b>7.11</b>	Support and sound financial management.....	41
<b>7.12</b>	Support and effectiveness of Corrective maintenance .....	42
<b>7.13</b>	Support and effectiveness of preventive maintenance.....	43
<b>8</b>	<b>Conclusions and Recommendations.....</b>	<b>44</b>
<b>8.1</b>	Conclusions .....	44
<b>8.2</b>	Recommendations .....	45
<b>9</b>	<b>References.....</b>	<b>46</b>





## List of Tables

Table 1: Service level sub-indicators and standards, as set by CWSA.....	6
Table 2: Ghana water service ladder .....	6
Table 3: Service level score of a small piped system.....	7
Table 4: Overview of sustainability indicators.....	8
Table 5: Overview of facilities in the district .....	13
Table 6 : Distribution of pipe systems in Akatsi District.....	22
Table 7: Service level scores .....	23
Table 8: Distribution of WSMTs for hand pumps by Area Council .....	25
Table 9: Performance of small community WSMTs in relation to Governance: Number of WSMTs meeting the benchmark .....	26
Table 10: Performance of WSMTs for point source in relation to financial management and accounting: Number of WSMTs meeting the benchmark.....	27
Table 11: Performance of point source WSMTs in relation to operations: Number of WSMTs meeting the benchmark.....	28
Table 12: Distribution of piped system WSMTs by Area/Town council .....	30
Table 13: Performance of WSMTs in relation to governance .....	31
Table 14: Performance of WSMTs in relation to Operations .....	32
Table 15: Performance of WSDBs in relation to financial management and accounting .....	33

## List of Figures

Figure 1: Functions, levels and service delivery models.....	5
Figure 2: Distribution Hand pumps by area council .....	14
Figure 3: Financier and year of facility construction .....	14
Figure 4: Year and type of hand Pump installed .....	15
Figure 5: Existence of management institutions for hand pumps .....	16
Figure 6: Functionality by area council.....	16
Figure 7: Functionality and age of hand pump.....	17
Figure 8: Functionality by hand pump type.....	18
Figure 9: Reliability by area council.....	18
Figure 10: Crowding by area council .....	19

Figure 11: Percentage of populations within 500m of facility .....	20
Figure 12: Water quality sampling and anlysis.....	21
Figure 13: Quantity of water delivered by hand pumps .....	21
Figure 14: DWST support to WSMTs for point sources.....	29
Figure 15: Presence of WSMT and hand pump functionality.....	35
Figure 16: Records keeping and hand pump functionality.....	36
Figure 17: functionality and Preventive maintenance .....	36
Figure 18: Functionality and revenue.....	37
Figure 19: Support and functionality.....	38
Figure 20: Records keeping and reliability .....	38
Figure 21: Support and presence of WSMTs .....	39
Figure 22: Support and records keeping .....	40
Figure 23: Records keeping and revenue mobilization .....	40
Figure 24: Support and revenue mobilization.....	41
Figure 25: Support and sound financial management .....	42
Figure 26: Support and corrective maintenance.....	42
Figure 27: Support and Preventive maintenance.....	43

## ACRONYMS

COM	Community ownership and management
CWSA	Community Water and Sanitation Agency
DA	District Assembly
DANIDA	Danish International Development Assistance
DiMES	District monitoring and evaluation system
DWSP	District water and sanitation plan
DWST	District Water and Sanitation Team
EHA	Environmental Health Assistant
EHSD	Environmental Health and Sanitation Directorate
FLOW	Field Level Operation Watch
GoG	Government of Ghana
GTZ	Gesellschaft für Technische Zusammenarbeit
GWCL	Ghana Water Corporation Ltd
HH	Household
KfW	Kreditanstalt für Wiederaufbau (German Development Bank)
lpcd	Litre per capita per day
M&E	Monitoring and evaluation
NGO	Non-government organisation
O&M	Operation and Maintenance
RCC	Regional Coordinating Council
RLF	Regional Learning Facilitator
WSMT	Water and Sanitation Management



# 1 Introduction and background

Rural and small town water supply has been reported to cover 63% of the rural population of Ghana (CWSA Annual Report 2011), thereby being on track to achieving the MDG target for water. However, behind this apparent success are a complex set of challenges that hinder the achievement of sustainable service.

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). This 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). Understanding the degree of non-functionality and reasons for that is crucial to define actions to improve them.

In Ghana, a substantial proportion of water supply infrastructure is believed to be either not-functioning or functioning sub-optimally at any time. Because of the lack of an effective monitoring system, data to back-up this claim is lacking in Ghana. The Community Water and Sanitation Agency 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 to operationalize this system and feed it with (real-time) data. Furthermore, as in many other countries, focus has primarily been on coverage measured in terms of number of systems built and people served, not 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 tracking the level of service over time and the performance of key technical, financial and management functions is crucial to allow problems to be anticipated and addressed.

Consequently, under the Triple-S initiative, the Community Water and Sanitation Agency (CWSA) and IRC are working together to improve monitoring of service provision in the country. This work has three main components outlined below:

- 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 the results of the baseline assessment of the status of service levels, service providers and support functions, in Akatsi District in Volta Region. The main objective of this report is to present strengths and weakness in the provision of sustainable water services at service provision and district level, particularly in terms of compliance of the CWSA norms and standards for service levels, 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 results of this assessment are in the first place meant to be an input into district level plans for addressing these gaps. Moreover, this assessment serves as a baseline for the work that Triple-S is carrying out in the districts to improve service delivery. The data were used to identify relations between service



level, service provider and service authority functions, so as to inform broader actions that can be taken by the District Assembly.

## 1.1 Outline of this document

This introductory chapter has given the background of 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 is presented in chapter 4, while chapter 5 focuses on the assessment of community-based service providers (WSMTs for both point sources and piped systems) and chapter 6 on the assessment of service authorities (District Water and Sanitation Teams), providing support to service providers. Chapter 7 presents and discusses correlations between functionality and reliability of water supply facilities, the level of service that they 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.

## 2 Conceptual framework and methodology

This section 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, service level indicators have been developed, as well as service provider and service authority indicators, in order to assess and monitor whether the conditions needed for sustainable water service provision are in place. The second part of this section describes the methodology of this study.

### 2.1.1 Functionality

Functionality of water supply infrastructure can be assessed to get a picture of the state of water infrastructure at a particular time. It is important to clearly define what is meant by 'functionality'.

For 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 carrying out stroke and leakage test (Box 1). Point sources that pass both tests are considered functional. Point sources that either pass the stroke or leakage tests are considered partially functional. Point sources that do not pass either test can be considered non-functional. In cases where the test cannot be executed because of complete breakdown of the facility, the point sources are classified as "broken down".

#### **Box 1**

##### **Stroke test:**

For the stroke test, the number of hand pump strokes needed to fill a size 34 bucket (18 to 20 litres) is determined. In order for this test to be successful, the maximum number of strokes is 40 strokes within 1 minute for Afridev and Ghana Modified India Mark II and 30 strokes for Nira AF-85 hand pump

##### **Leakage test:**

Following the stroke test, pumping is resumed after 5 minutes. If water flows from the hand pump within 5 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 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, may be broken down the rest of the time. Furthermore a functioning facility may be providing water of an unacceptable quality or quantity, or can be hard to access, for example because of the distance or because of the fact that too many people depend on the 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 functionality, but also to look at functionality over time (reliability) and other water service characteristics, such as accessibility of the services and the quality and quantity of water provided and used. Furthermore, it is important to assess

whether structures and service provision and support arrangements are in place to ensure that the facility is not only currently providing water services, but will have a higher chance to doing so into the future.

### 2.1.2 Defining sustainable water services and indicators for measuring this

Sustainable water services can be defined as the supply of design quantity of water, with acceptable quality, accessibility and reliability. It should ideally be assessed and monitored from a user perspective: The level of services that people have access to (in terms of quantity, quality, reliability and accessibility of the service) and the level of service that they are actually using (in terms of amount and quality of water). For this study however, focus is on the level of services provided by facilities in terms of the quantity and quality of water that it provides and the accessibility and reliability of the service provided by the facility, taking functionality 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.

In the context of the rural and small town water sub 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. In fact, it is remarkable that no internationally agreed indicators for measuring “sustainability” or functionality of rural water supply systems exists (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 indicators over time.

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

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 (District Assembly) functions** include direct support, performance regulatory, planning and coordination at decentralised level. These functions are generally provided at the level between the community and the national level, which in Ghana is the district and the regional level. In order for the water service providers and service authorities to perform their tasks, an **enabling environment** is needed from higher, often national level, including the setting on targets, policy making and regulation and capacity support to the service authorities.

**Service delivery models** describe the ‘how to’ of applying the service delivery approach, namely 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 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 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, the different indicators used for this study are introduced.

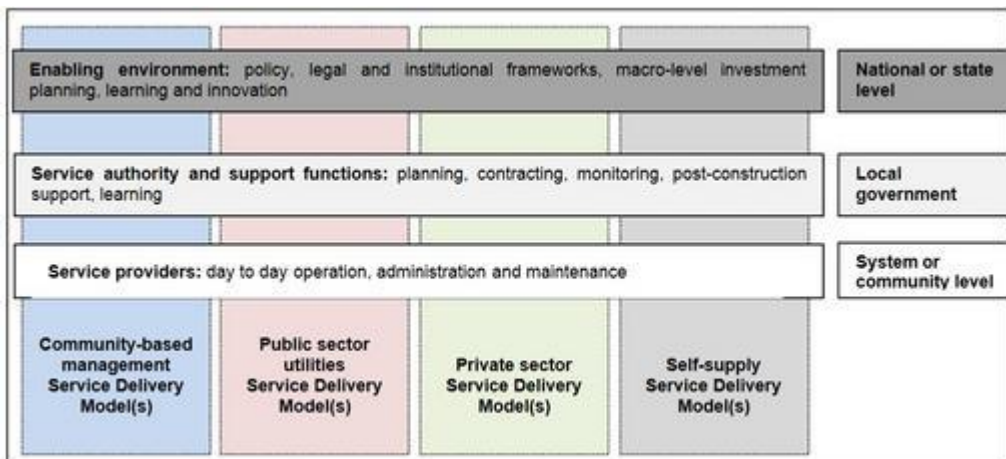


Figure 1: Functions, levels and service delivery models

### 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 crowing.

In Ghana, it is a governments (Community Water and Sanitation Agency), which is responsible for setting and regulating standards related to rural water service provision. In its Legislative Instrument (2011), it sets out the following standards:

- '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 for both point sources and 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, it states that the delivering of water should be done in a virtually uninterrupted manner, at least ninety-five per cent of the time. When applying this criterion on an annual basis, this means that the facility should be providing services for at least 347 days in the year (with a maximum of 18 days downtime). Regarding water quality, the Legislative Instrument stimulates that the quality of the water provided should comply with the parameters for the physical and bacteriological monitoring, determined by the Ghana Standards Authority GS 179-1:2009 3rd Edition Standards.

CWSA design guidelines for small communities and small towns stipulates that the maximum number of people per borehole or tap should not exceed 300 people. The maximum number of users for hand dug wells 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 Authority water quality standards (based on WHO quality standards)
Crowding: maximum number of people per facility	Point source / standpipe: 300 Hand dug well: 150
Distance to water point	Less than 500 metres
Reliability	The facility is providing water for at least 95% of the year interpreted as at least 345 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. 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, the water service ladder can be constructed to define 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
<b>High level service</b>	100	The facility provides a minimum of 60 litres per capita per day (lpcd) of high quality water on demand.
<b>Intermediate level service</b>	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.
<b>Basic level service (Benchmark)</b>	50	The facility provides reliable water services (at least 345 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.
<b>Sub-standard level service</b>	25	The facility provides water services which are an improvement from not having water services at all, but fails to meet the basic standards on one or more criteria (quantity, quality, reliability, distance, crowding).
<b>No service</b>	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, should provide a similar level of service as point sources. Small community and small town piped system often provide services through a mix of standpipes, providing a basic service level, and household connections, providing a high service level. 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 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	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 guidelines and standards have been defined parameters to guide service providers and District Assemblies. The service provision and authority indicators give an indication of the degree of compliance of these arrangements and structures as described in the CWSA standards and guidelines, including the model by-law for WSMTs for piped systems. **Service provider indicators** cover compliance by service providers for both point sources and piped systems, while service authority indicators are used to assess compliance by district assemblies, 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.

The service provider indicators are grouped into 3 sets of 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 total overview of the indicators, sub-indicators, scoring tables and benchmarks, see indicator framework, CWSA and IRC, 2012.

Table 4: Overview of sustainability indicators

		WSMTs managing point source	WSMTs managing a piped system	
Service provider indicators	Governance	A well-qualified, trained and experienced gender balanced WSMTs is in place		
		Technical, administrative and financial reports are kept and read out to the community at least once every six months		
		There is no political or chieftaincy influence in the composition of the WSMTs		
	Operations	Spare parts are available to enable maintenance	The private sector provides the needed support to the WSMTs	
		Area mechanics are available for maintenance		
		Corrective maintenance is executed in an effective manner	The WSMT prepares a work plan and budget for operations and maintenance (O&M) and executes maintenance accordingly	
		Periodic maintenance is executed in an effective manner		
		Water quality sampling and analysis (WQSA) services are performed on half yearly basis by recognised institutions		
	Financial management	Annual income from water sales exceeds total annual expenditure		
		There is sound financial management, accounting and auditing		
Tariff setting is taking 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.				
Service authority indicators	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			
	There is a well-resourced DWST, consisting of 3 well qualified and experienced staff members, receiving the needed support by CWSA and MMDA.			
	There are efficient monitoring and data flow			
	District Water and Sanitation Plan is incorporated into Medium Term Development Plans and budget of the assembly, which is used to guide implementation			
	Districts are able to allocate and utilise financial resources for water and sanitation services			
	Sup 5: By-laws for WSMTs for point sources and piped exist and are enforced effectively			
	NGOs and Civil Society Organisations (CSO) providing water facilities do so in coordination with the MMDA			

## 2.2 Methodology

This study has followed the action research methodology of 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. It followed short loop feedback cycles, sharing and discussing preliminary data with key stakeholders at different steps of the research process (so not just at the end). It combined research (data collection and analysis to get a better understanding of water service provision) with action (development and testing of indicators and processes to improve monitoring). This section presents the process of indicator development, 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 based on the national guidelines, manuals and model by-laws by the CWSA Monitoring and Evaluation working group and functionality subcommittee with support from the Triple-S initiative. The Indicators and scoring tables were subsequently reviewed by CWSA's Technical Committee and other national level sector stakeholders during the National Level Learning Alliance Platform (NLLAP) meeting. Based on the received suggestion and comments, the indicators and scoring systems were refined. The resulting indicators and scoring systems were used as framework for analysis of a "looking back in order to inform the way forward" study in Volta region and Northern Region which led to 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 easily and unambiguously score the indicators on a larger scale. These questions were field tested in the second half of 2011. This led to a further refinement of some of the indicators, the questions and the scoring systems, which were used for the collection of baseline data in the 3 Triple-S focus districts from November 2011 till January 2012.

The findings of this baseline study forms 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 was collected for all existing rural and small town facilities and community-based service providers in Akatsi in the Volta Region of Ghana. The service providers included WSMTs for both point sources and piped systems. Facilities were either point sources (boreholes with hand pumps) or piped systems (limited mechanized boreholes, small community systems and small town systems). Thus data was collected from only protected systems as defined by CWSA.

### 2.2.3 Data collection

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

The final version of the survey was loaded on FLOW (a smart phone run on android technology) and linked to a web based server (dashboard) via internet. These phone-based questionnaires were field tested in Agbagblakope in Akatsi. The actual data collection commenced in November 2011 and run through to the end of December 2011, where data was collected from all potable water facilities and focus group discussions done with all service providers and the District Assemblies.

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 of 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, who were trained in the use of the Android telephones and the survey instruments. The training involved practical and theoretical sessions, including,

the scoring of indicators, calibrating Global Positioning System (GPS) devices, operating the Android operating system, the touch screen and software keyboard.

The data collection process was supported and supervised by the 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 observations of facilities, including stroke and leakage test (in the case of hand pumps) and photography of each facility
- Focus group discussion / group interview with WSMTs of both point sources and piped systems
- Inspection of financial and administrative records, where available
- Focus group discussions / group interview with DWST

#### 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 at a distance by the Regional Learning Facilitator (RLF) of Triple-S in Volta Region, as the surveys arrived on the dashboard from the field. This allowed for instant corrections of discrepancies in the data where necessary. In addition, the RLF monitored activities of enumerators via phone when it became necessary for clarifications on the incoming data.

Prior to the completion of data collection, data cleaning and analysis training was conducted for DPCU, DWST and CWSA staff in Akatsi to enable them be able to extract data from the dashboard into excel templates and conduct basic analysis using pivot table and charts. Subsequent to the data analysis training, the complete data was actually extracted from from the dashboard, cleaned and analysed by a joint team of Akatsi District Assembly staff, CWSA, and the RLF. The initial findings were shared with CWSA technical team at the regional level, technical staff of the Akatsi District Assembly, and Executive Committee of the District Assembly in the form of power point presentations.

Further joint analysis and writing was carried out by bringing together Triple-S staff, the Regional Learning Facilitators and national level CWSA staff. This process led to the development of the first draft of the District report. Findings from the district were also used to develop factsheets.

#### 2.2.5 Limitations

The study has the following limitations:

- Reliance on perception of the service provider on issues of water quality instead of measuring physical, chemical or biological water quality data: the study limited parameters to taste, colour and odour etc.
- Non-availability of financial data and water quantity data from the WSMTs for piped systems: Data on finances and quantity of water provided and sold from pipe systems was unavailable. WSMTS 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 constraints, this study 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.

### 3 Introduction to the focus district

Akatsi district is one of eighteen (18) administrative districts in the Volta Region. It is located in the South-Eastern part of the Volta Region, specifically between latitude 6°S – 7°N and Longitude 0°W – 1°E. The district has a total land area of about 405 km<sup>2</sup> and shares boundaries with six (6) other districts within the same Region and the Republic of Togo. To the north, it shares boundaries with Adaklu-Anyingbe district and the Republic of Togo. On the Eastern side, it is bounded by Ketu South and North Districts, while at the western end, it shares boundaries with North and South Tongu districts. In the south, the district is bounded by Keta District (AkatsiDWSP 2011-2014).

The Akatsi district is sub divided into five (5) area/town councils. These include; Akatsi, Dakpa, Avenorpeme area council, Gefia area council, and Wute area council. According to the Akatsi DWSP profile of the district, Wute and Gefia area councils are very poor, deprived and have limited access to social services. Access to Social services in the other area councils is much better. This is evident in the water coverage of the various area councils. Most Women and children in these deprived area councils walk long distances daily to access water of uncertain quality for domestic use (Akatsi DWSP 2011-2014). Limited access to water and sanitation and other social services such as education, health care delivery, and electricity have impacted negatively on the economic development and living standards of the people in the District (Akatsi DWSP 2011-2014).

The District falls within the coastal savannah equatorial climatic regime characterized by high temperatures (min: 21°C, max: 34.5°C), high relative humidity (85%) and moderate to low rainfall regime (1,084mm) with distinct wet and dry seasons of about equal lengths.

The population of the District according to projections in DWSP is 117,606, with about 46.9% (55,157) being males and 53.1% (62,149) females. The district is more densely populated than the rest of the region, probably because of its closeness to the Republic of Togo and commercial or business potential. About 79% of the people in Akatsi district live in rural settlements with limited or no access to basic social services such as potable water, sanitation, health care and education. The rest of the 21% either live in Akatsi town or settlements relatively larger and closer to Akatsi town where access to social services is much better.

There are a variety of water sources in the Akatsi District, both protected and unprotected. The protected and safe sources include 249 boreholes, 1 Small TownPipe System and 5 Small Community Pipe Systems. The safe water sources were provided by a number of financiers through the implementation of different projects in different years. Three major financiers of the safe water sources among the lot are Kreditanstalt für Wiederaufbau (KfW), Danish International Development Agency (DANIDA) and Life Time Wells.

Water coverage for the entire District is 62.15% (AkatsiDWSP 2011-2014), which is slightly above the Regional average. To further improve the water situation and increase coverage, the District has clearly indicated in their current DWSP its plan of constructing 62 new boreholes.

With the support of Volta Region office of CWSA, Akatsi has a monitoring and evaluation system for monitoring of water services and facility functionality. The service monitoring of water system functionality is done on quarterly basis by the District Water and Sanitation Team (DWST) with the support of Environmental Health Assistants (EHAs).



## 4 Results: Water Facilities

### 4.1 4.1 Overview of water facilities

The baseline study in Akatsi District found a total of 249 hand pumps, 6 pipe systems and 85 stand pipes. Out of the 249 hand pumps in the District, 78 are located in Avenorpeme area council. The rest are fairly distributed among the remaining 4 area councils, with Akatsi town council, which is mainly served by a small town piped system, having the least number of hand pumps. Two (2) of the 5 small community piped systems are found in Avenorpeme, one in Ave Dakpa, and the remaining 2 in Gefia area council. Wute is the only area council that does not have a piped system. The Akatsi Area council pipe system is the biggest and has the widest coverage and distribution network with 47 stand pipes. The remaining pipe systems are relatively small and have 5 to 10 stand pipes.

Table 5: Overview of facilities in the district

Area council	Total number of hand pumps	Total number of piped systems	Total number of standpipes
Akatsi	32	1	47
Ave Dakpa	54	1	10
Avenorpeme	78	2	16
Gefia	43	2	11
Wute	42	0	0
Total	249	6	85

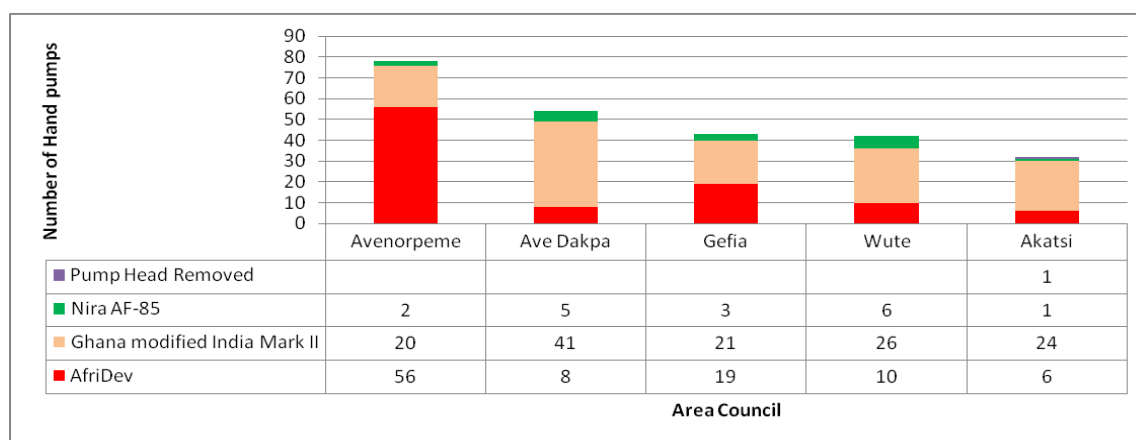
Source: Akatsi District functionality and service monitoring data, 2011

### 4.2 Point Sources

The 249 hand pumps surveyed are fitted with AfriDev, Ghana Modified India Mark II and Nira AF-85 hand pumps, which are the standardized and recommended hand pumps by CWSA. Cumulatively, AfriDev and Ghana Modified India Mark II account for 93% of all the pumps fitted on the boreholes. While the Borehole fitted with Ghana modified India Mark II are more and evenly distributed among the 5 area councils: 57% of AfriDev pumps are found in Avenoperme Area Council with the rest fairly distributed among the other Area Councils. The survey also recorded one borehole without a pump head. It was difficult for anyone to determine which of the pump types was originally mounted on the borehole.

As indicated in the Figure 2, Avenorpeme area council has the highest number of hand pumps, followed by Ave Dakpa, Gefia, Wute, with Akatsi having the least. More than two-thirds of the AfriDev Hand pumps (72%) are found in Avenorpeme, while Ave Dakpa area council accounts for the highest number of Ghana Modified India Mark II.

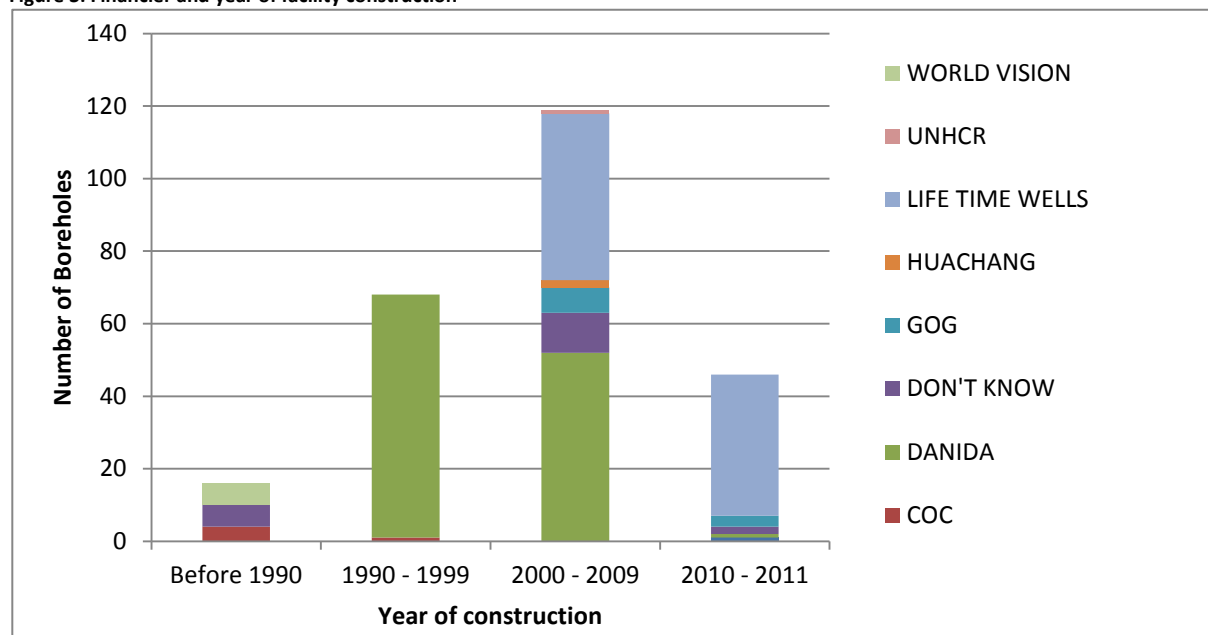
Figure 2: Distribution Hand pumps by area council



Source: Akatsi District functionality and service monitoring data, 2011

Generally, the boreholes fitted with hand pumps in the District were provided in the last 2 decades. Before then the District had less than 20 hand pumps. Between 1990 and 1999, DANIDA funded provision over 60 boreholes, and in the following 10 years DANIDA again through the implementation of the phase II project together with Life Time Wells funded provision of nearly 120 more boreholes representing about 100% increase over previous decade. Within the last 2 years, provision of boreholes under DANIDA funding in the Akatsi District has reduced considerably, while Life Time Wells remained the major financier of borehole drilling in the District (See Figure 3).

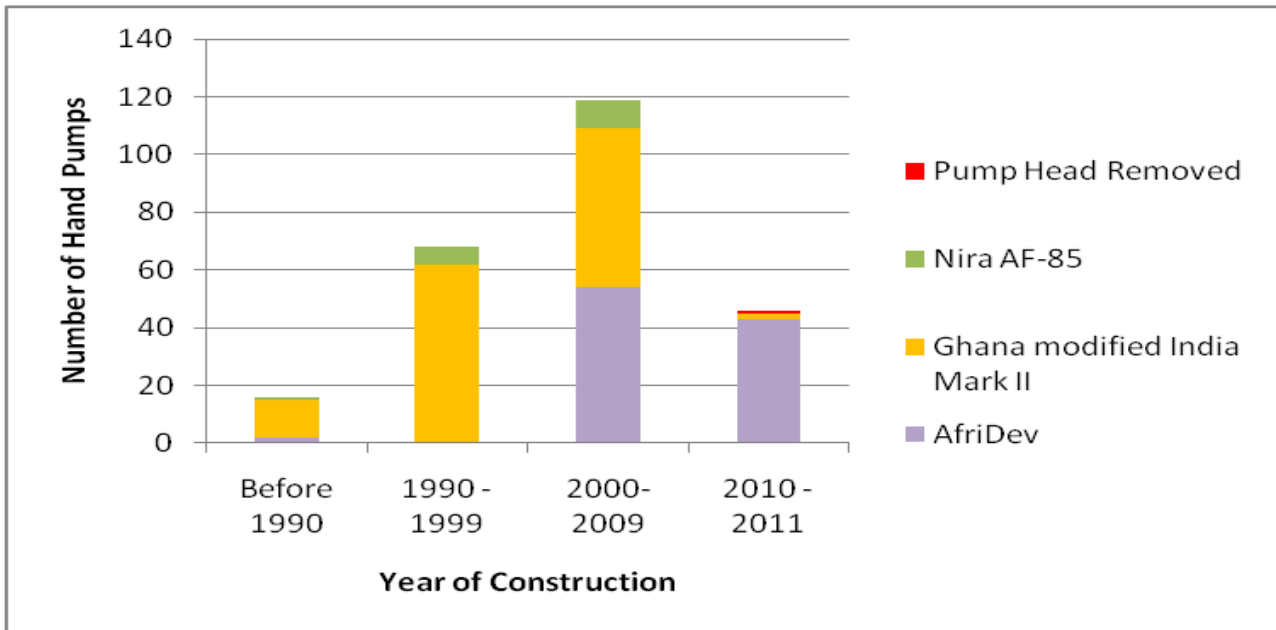
Figure 3: Financier and year of facility construction



Source: Akatsi District functionality and service monitoring data, 2011

As clearly shown in Figure 4, almost all the hand pumps that were constructed in the District before 2000 were fitted with Ghana Modified India Mark II. However, after the year 2000, project implementers started fitting AfriDev hand pumps. The same data has also revealed that most of the boreholes fitted with AfriDev hand pumps were provided by Life Time Wells while over 80% of the DANIDA funded boreholes were also fitted with Ghana Modified India Mark II.

Figure 4: Year and type of hand Pump installed

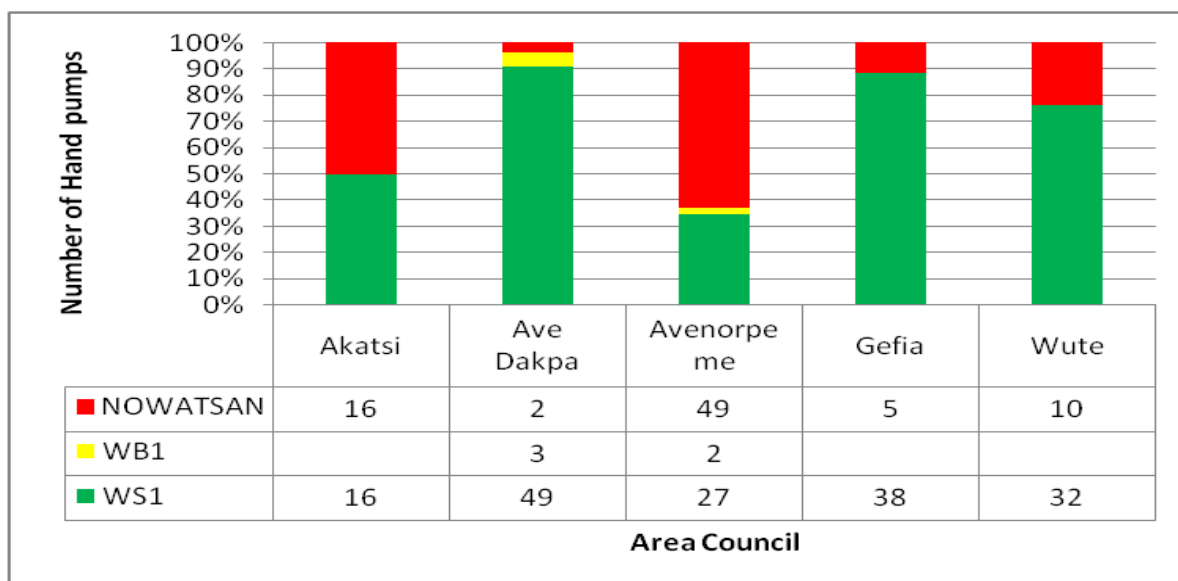


Source: Akatsi District functionality and service monitoring data, 2011

The guidelines and standards for delivery of all potable water facilities require the formation and training of water facility management institutions for the day-to-day operations, management and maintenance of the water facilities. The management committees for point sources and small town water systems are referred to as Water and Sanitation Management Teams (WSMTs) for small communities and Water and sanitation Management Teams (WSMTs) for small towns respectively. Arrangement has also been made for point sources that fall under the operational areas of piped systems to be managed by the same management teams as the piped systems.

The baseline study in Akatsi District found out that only 167 (67%) out of the 249 boreholes have management institutions. Of these, 162 boreholes were managed by WATSANS, while 5 were managed WSMTs for piped systems. (Fig. 5). While in Ave Dakpa, Gefia and Wute area councils less than one-third of the hand pumps do not have management institutions, more than two-thirds of the hand pumps in Avenorpeme do not have WSMTs for point sources or WSMTs for piped systems. Interrogation of the financier revealed, it was the District Assembly's responsibility to mobilize the communities, form and train WSMTs for point sources as per the agreement signed with the Assembly.

Figure 5: Existence of management institutions for hand pumps



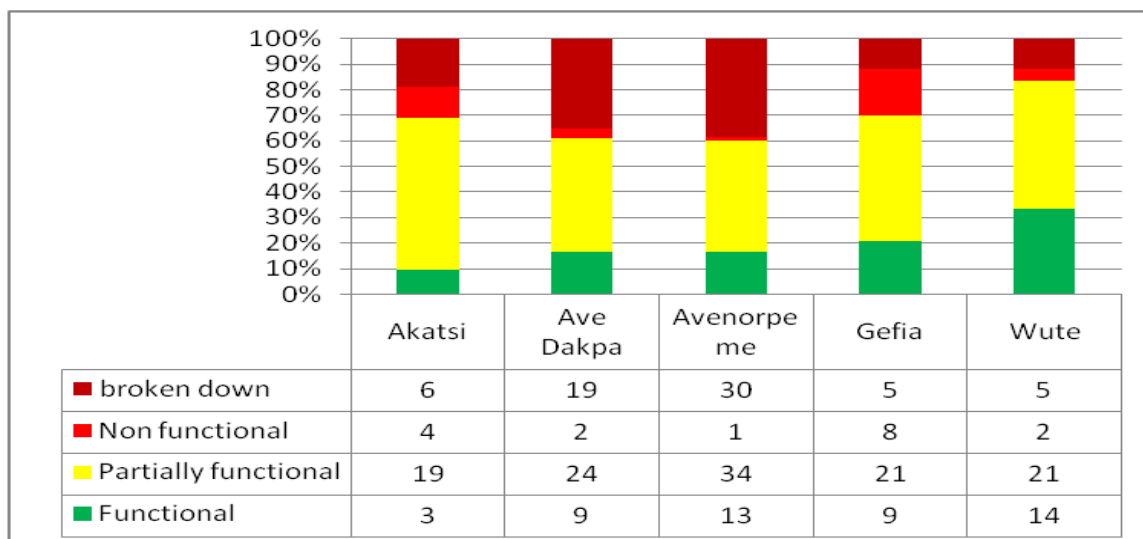
Source: Akatsi District functionality and service monitoring data, 2011

### 4.3 Functionality of hand pumps

In assessing functionality of hand pumps, two indicators were used; the stroke and leakage tests. If a hand pump was successful in both tests, it was considered fully functional. If it was successful in only one of the tests, it is considered partially functional and if it failed both tests, it was considered non-functional. If neither test could not be performed because of total breakdown of the hand pump, the facility was considered broken down.

The baseline survey in Akatsi District found out that 48 of the 249 hand pumps were functional, 119 partially functional, 17 non-functional and 65 completely broken down. About two-thirds of the completely broken down facilities were in Ave Dakpa and Avenoperme Area councils (See Figure. 6). The baseline study was unable to investigate the cause of non-functionality of the hand pumps.

Figure 6: Functionality by area council

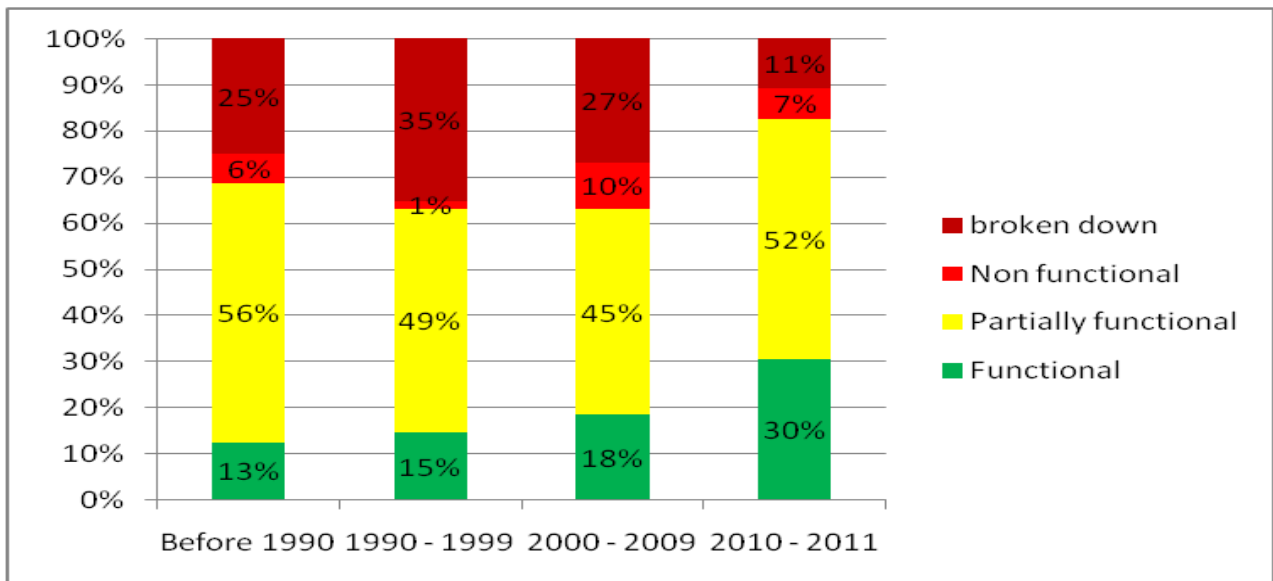


Source: Akatsi District functionality and service monitoring data, 2011

Figure 7 shows that, functionality of hand pumps decreases with age. Functionality of the boreholes provided in Akatsi District before year 2000 is lower than those provided afterwards. This is a clear indication that older hand pumps are more prone to breakdowns than newer ones.

This relationship points to the fact that, the district needs to develop a hand pump replacement plan and liaise with other water service providers in the district to rehabilitate or completely replace the old hand pumps.

Figure 7: Functionality and age of hand pump



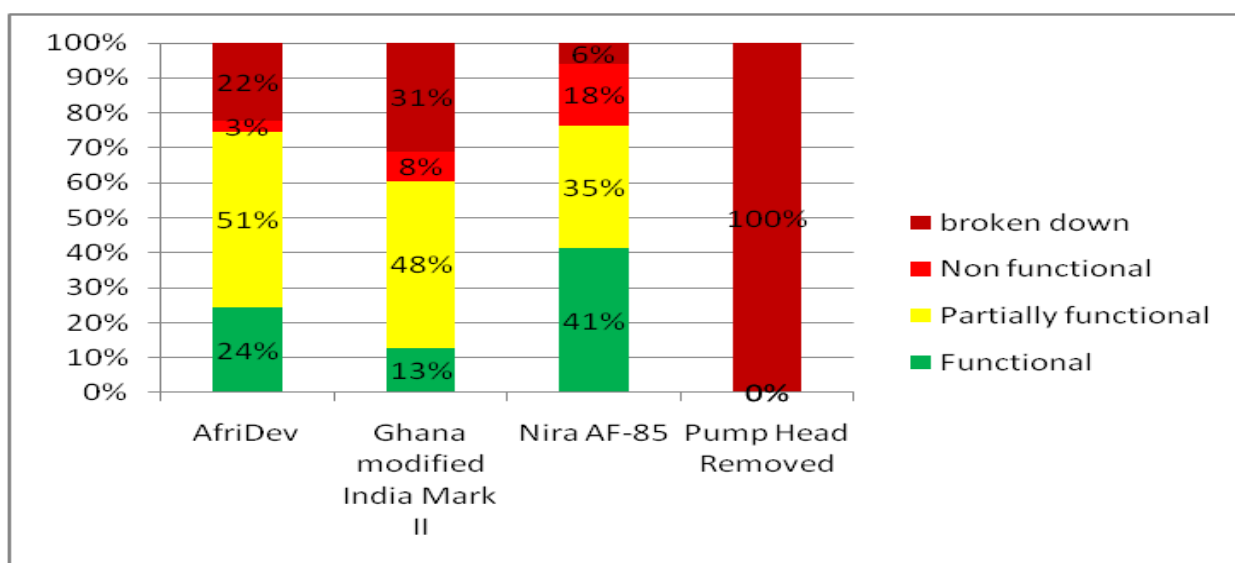
Source: Akatsi District functionality and service monitoring data, 2011

As shown in Figure 8, functionality of Nira AF-85 is higher as compared to AfrivDev and Ghana Modified India Mark II. However, the Nira AF-85 hand pumps are just a few and its percentage functionality cannot be effectively compared with AfriDev and Ghana Modified India Mark II. In addition, Nira AF-85 hand pumps are normally for shallow well application such as shallow boreholes and hand dug wells.

Comparison between AfriDev and Ghana India Mark II has revealed that, functionality of AfriDev hand pumps in the District is higher than that of Ghana Modified India Mark II (See Figure. 9).

Still comparing the two types of hand pumps, percentage broken down boreholes among the Ghana India Mark II are by far more than those fitted with AfriDev hand pumps.

Figure 8: Functionality by hand pump type



Source: Akatsi District functionality and service monitoring data, 2011

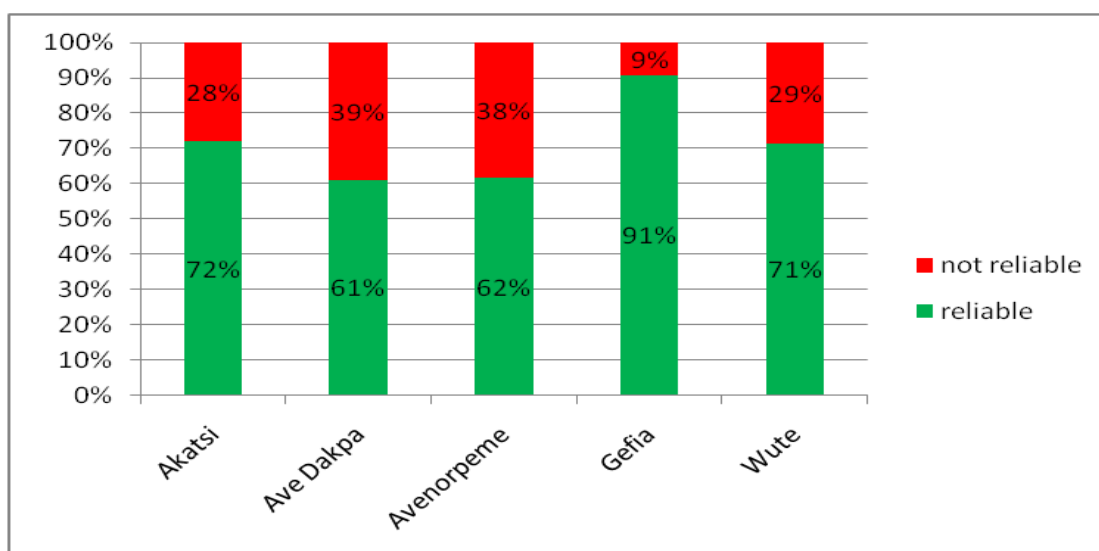
## 4.4 Service level indicators

### 4.4.1 Reliability

As in CWSA standards and guidelines for delivering rural water and sanitation services, a water facility should function and deliver water services 95% of the time. In very literal terms, a water facility should not be broken down cumulatively for more than 18 days in a calendar year.

However, the study in Akatsi District found out that, 31% of all the hand pumps in the District did not function 95% of the times in the past year and were therefore not reliable. As shown in Figure 9, the hand pumps in Gefia area council were found to be more reliable than those in the other Area Councils. The situation was worst in Ave Dakpa and Avenorpeme Area councils where more than one-third of hand pumps were unreliable.

Figure 9: Reliability by area council



Source: Akatsi District functionality and service monitoring data, 2012

#### 4.4.2 Crowding

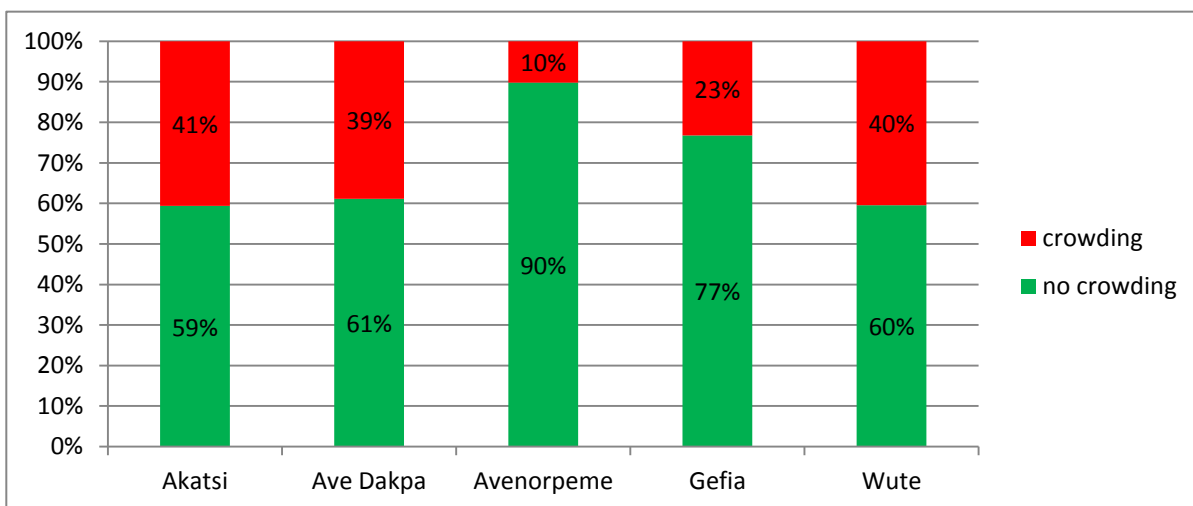
As stipulated in the CWSA standards and guidelines for operation and maintenance of rural water facilities, a borehole shall serve a population not exceeding 300. If any borehole fitted with hand pump is serving population above the acceptable threshold, it is deemed to be experiencing overcrowding.

The study in Akatsi District revealed that about a third of the boreholes in the District were experiencing overcrowding. Disaggregated results indicated that, 38% and 40% of the boreholes fitted with hand pumps in Akatsi, Ave Dakpa and Wute area councils were experiencing overcrowding. The situation was much better in the Avenoperme area council, where only 10% of the boreholes were experiencing crowding (See Figure 10).

The results are quite suggestive that people in Akatsi, Ave Dakpa and Wute area councils are more likely to spend more time collecting water for their households than the situation may be in the other two area councils.

The data therefore presents a very clear picture of deficient water infrastructure in the affected area councils and provides strong basis for reprioritization and targeted infrastructural development.

Figure 10: Crowding by area council



Source: Akatsi District functionality and service monitoring data, 2011

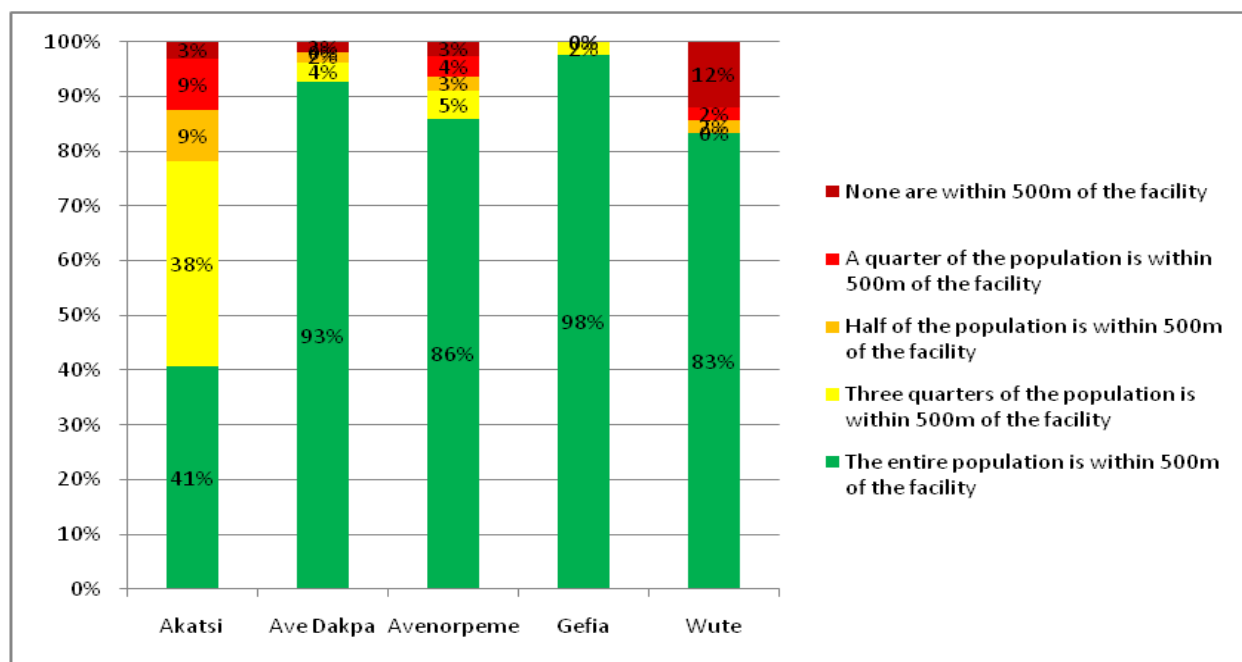
#### 4.4.3 Distance

The standards for rural and small town water service provision in Ghana sets 500 meters as the maximum allowable distance for people to travel for water collection. Thus, unless it is impossible to extract ground water within the set distance, all rural water facilities, especially hand pump based ones, must be located within 500m from the farthest house within the community.

The baseline survey established that 83% of the boreholes in the Akatsi district fall within the 500m distance and therefore satisfy the condition of distance for water service delivery. Further analysis has shown that, with the exception of Akatsi area council, over 80% of boreholes in the other four area councils are within the 500meters distance. In Akatsi town council, more than 50% of the boreholes are located more than 500m from the farthest house, which may compel community members to travel longer

distances and spending more time collecting water than their counterparts in the other area councils (see figure 11). The reason could be difficult hydrogeological terrain which makes it difficult for location of boreholes within the agreed distance.

Figure 11: Percentage of populations within 500m of facility



Source: Akatsi District functionality and service monitoring data, 2011

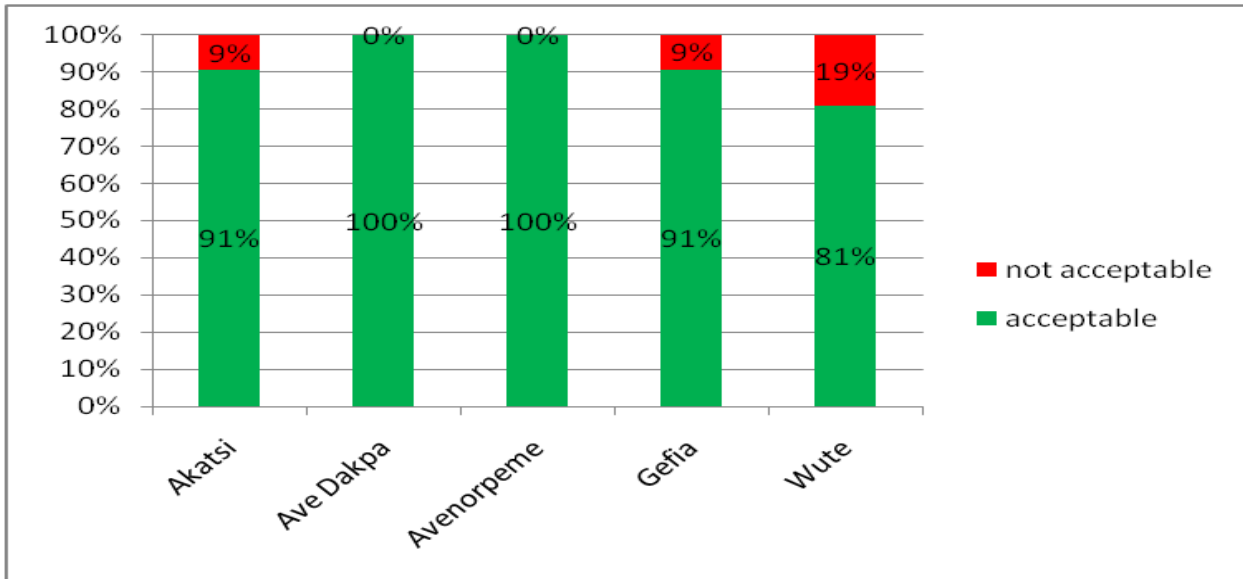
#### 4.4.4 Quality

The national guidelines and standards for water service delivery state that, water from all potable sources must meet quality standards of Ghana Standards Board based on WHO standards. Thus, for water of any kind to be considered of good and acceptable quality for household use, it must go through rigorous physical, chemical and bacteriological examination and testing.

The the baseline study in Akatsi did not make provision for such water sampling and analysis and therefore did not conduct chemical and bacteriological investigation to determine with certainty the water quality. It however depended on provider and user perception (judgment usually based on odor, color and taste). Over 95% of the WSMTs for point sources in the District perceived quality water provided by their facilities as having good taste, , colour and odor and thus acceptable to users. (See figure 12).



Figure 12: Water quality sampling and analysis



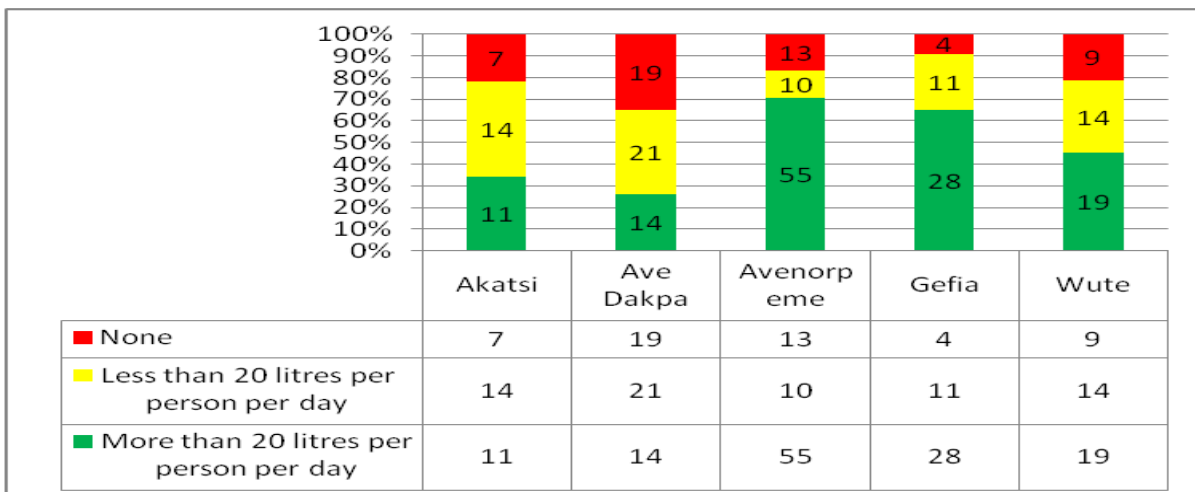
Source: Akatsi District functionality and service monitoring data, 2012

#### 4.4.5 Quantity

For rural and small town water service standards, each individual must have access to a minimum of 20liters of safe water per day. The baseline study in Akatsi District did not conduct household surveys to determine whether or not users had access to 20liters of water per person per day. The study depended on responses from WSMTs to estimate the amount of water delivered by hand pumps to users.

Out of the 249 hand pumps surveyed in the Akatsi District, 127 (51%) were considered to be providing 20liters of water per capita per day, 70 (28%) less than 20 liters per capita per day and 52 (21%) no service at all. (see fig. 13)

Figure 13: Quantity of water delivered by hand pumps



Source: Akatsi District functionality and service monitoring data, 2011

#### 4.4.6 Service level score

Water services can be defined in terms of acceptable quantity, quality and with an acceptable reliability and accessibility, as stated in the CWSA guidelines and standards. Putting all the indicators for assessment of water service levels together, it emerged that, 69 of the hand pumps were not providing water services at all, 152 are providing water services but have did not meet the benchmark for one or more of the indicators, 3 have met the benchmark for part of the population, and 25 met the benchmark for entire population.

More than 50% of the hand pumps in all the area councils were either not providing water services at all or providing water, but had not met the benchmark on one or more of the criteria.

### 4.5 Piped systems

Communities with populations between 2,000 and 50,000 are normally provided with simple piped schemes and have a choice of community operation and management or operation and management via private operator supervised by WSMT.

#### 4.5.1 Overview of pipe systems

There are 6 Piped systems in Akatsi District serving populations ranging from 826 to 30,616. The Akatsi piped system is the largest. It was constructed in 2000 through the implementation of the EVORAP project. Four of the remaining 5 piped systems; AveDakpa, Avenorpeme, Dagamete, and Lume were constructed with DANIDA funding through the implementation of DANIDA phase I and II projects from the late 1990s through to 2008. The WlityeAlogbakope water facility is the most recent among the 6 pipe system and was constructed in 2009 by the Government of Ghana using the Member of Parliament's share of the District Assembly Common Fund (DACF).

All the six of the piped systems are use ground water based. Apart from Lume-Avete system which is solar powered, the other five are powered by electricity.

Table 6 : Distribution of pipe systems in Akatsi District

	Area Council				Grand Total
	Akatsi	Ave Dakpa	Avenorpeme	Gefia	
Small Community Pipe system		1	2	2	5
Small Town Pipe System	1				1
<b>Grand Total</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>6</b>

Source: Akatsi District functionality and service monitoring data, 2011

#### 4.5.2 Functionality

At the time of the baseline survey, all six piped systems in the Akatsi District were found to be functioning and delivering water services.

## 4.7 Service Level Indicators

### 4.7.1 Reliability

Piped schemes by their design should deliver water in an uninterrupted manner over their design period. With exception of Lume-Avete piped system which was broken down for about three months last year and was considered to be delivering unreliable water services, the remaining 5 piped systems were found to be functioning 95% of the time in the last one year and were deemed reliable (see fig. 14 below).

### 4.7.2 Crowding

All 6 piped systems in the District are delivering water to populations far less than their design thresholds and are therefore not experiencing crowding.

### 4.7.3 Distance

All 6 piped systems and their stand pipes are located within 500m of the populations they serve. All community members therefore walk within acceptable distance to collect water from the stand pipes.

### 4.7.4 Quality

Just as in the case of the point sources, water quality sampling and analysis was not done on any of the piped systems to ascertain water quality. The study relied on perception of WSMTs. The interviews with all WSMTs showed that all the six water systems were producing and delivery water of acceptable taste, colour and odor to water users.

### 4.7.5 Quantity

Records from all the 6 WSMTs did not provide enough data for the study to authoritatively determine the quantities of water produced and distributed. This made it impossible to determine quantities of water received by individuals on daily basis (See table 7 below).

Table 7: Service level scores

Service level indicators	Piped Systems					
	Akatsi	Ave Dakpa	Avenorpeme	Dagbamete	LumeAvete	Wlitye/ Alagbokope
Reliability	Reliable	Reliable	Reliable	Reliable	Not Reliable	Reliable
Crowding	No Crowding	No Crowding	No Crowding	No Crowding	No Crowding	No Crowding
Proportion of Population within 500m Distance	100%	100%	100%	100%	100%	100%
Quality	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Quantity	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data	Inadequate data

Source: Akatsi District functionality and service monitoring data, 2011

## 4.8 Presence of Water meters

Four out of the six piped systems in the Akatsi District have bulk meters and which enables the WSDBs to accurately determine the amount of water produced at any given production time space. WlityeAlagbokope and Avonorpedo pipe systems did not have bulk meters and were not able to accurately determine the amount of water produced and distributed. While the bulk meter for Avonorpedo got damaged last year, the WlityeAlagbokope piped system was constructed without any.

The survey also observed that, in addition to the absence of bulk meters, the WlityeAlagbokpe pipe system did not have stand pipe meters, implying that, WSDB could not equally determine precisely how much water was produced, distributed and even sold to customers. There is therefore no mechanism for accountability.

As already shown in table 7 above, even the 4 piped systems that had bulk and stand pipe meters were not keeping adequate data, which made it impossible for determination of quantities of water produced and delivered to consumers on daily basis. This perhaps was due to weak monitoring by the DWST and inability of the District Assembly to audit them on regular basis.

## 5 Results: Performance of service provider

### 5.1 Overview of performance of WSMTs for small communities

In accordance with the guidelines, norms and standards for delivery of rural and small town water services, every point source shall be operated, managed and maintained by a WSMT, but with technical support from the District Assembly.

The baseline study observed that there were 109 WSMTs managing hand pumps in Akatsi District, constituted in line with the provision in the standards and guidelines for rural and small town water service delivery; 14 in Akatsi, 28 in Ave Dakpa, 14 in Avenorpeme, 32 in Gefia and 23 in Wute area/town councils. In two other communities there were no WSMTs, but some community members played the role of WSMTs and were therefore interviewed increasing the number to 111. (See table 8)

It also important to mention that, 5 hand pumps located in Dagabamete and Ave Dakpa are being managed by the WSMTs for the piped systems.

Table 8: Distribution of WSMTs for hand pumps by Area Council

AREA COUNCIL	Presence of WSMTs for hand pumps		
	NO WSMTs	WSMTs	GRAND TOTAL
Akatsi		14	14
Ave Dakpa	1	27	28
Avenorpeme		14	14
Gefia	1	31	32
Wute		23	23
<b>Grand Total</b>	<b>2</b>	<b>109</b>	<b>111</b>

Source: Akatsi District functionality and service monitoring data, 2011

#### 5.1.1 Governance

The standards and guidelines of CWSA state that, in the delivery of rural water services, every borehole fitted with hand pump should have a well constituted, trained and gender balanced WSMT to operate, manage and maintain the facility in an effective and efficient manner.

The baseline study observed that, more than a third of the WSMTs for boreholes fitted with hand pumps in the District did not have the required capacity to effectively and efficiently operate, maintain and manage the water facilities. While in Akatsi, Ave Dakpa and Wute area councils had up to 2/3 of the WSMTs having the required capacity, more than ½ of the WSMTs in Avenorpeme and Gefia did not met the benchmark.(See table 9)

**Table 9: Performance of small community WSMTs in relation to Governance: Number of WSMTs meeting the benchmark**

	Akatsi	Ave Dakpa	Avenoperme	Gefia	Wute	Total
<b>Governance</b>	n=14	n=28	n=14	n=32	n=23	n=111
Presence of well qualified trained and experienced gender balanced WSMTs	9	22	6	6	15	58
WSMTs Keeping administrative, technical and financial reports and reading to communities at least every six months	8	11	3	14	9	45
WSMTs whose composition was influenced by political leaders or chiefs	0	0	0	0	0	0

Source: Akatsi District functionality and service monitoring data, 2011

In order to ensure transparency and accountability in the operations and management of water facilities, all WSMTs are required to keep administrative, technical and financial reports and share with communities on half yearly basis.

The study rather revealed that, the culture of records keeping by WSMTs for hand pumps in the Akatsi District was generally not acceptable. Akatsi is the only area council where up to 50% of the WSMTs kept and shared records. In the rest of the 4 area councils, less than half of the WSMTs met the benchmark on records keeping and accountability. The situation was worse in Ave Dakpa, Wute and Avenorpeme, where less than 40% of the WATSANS kept appreciable level of records. (See table 9 above).

On the issue of political and chieftaincy interference with the selection and constitution of WSMTs for point sources, the study observed that, all WSMTs in the District had not experienced interference.

### 5.1.2 Financial management, Accounting and Auditing

The guidelines and standards of CWSA state that, WSMTs are required to set realistic tariffs, collect and manage revenue from sale of water and account for funds and submit their accounts for auditing by their respective district assemblies.

The survey results revealed that, about 2/3 of the WSMTs for point sources in the District were posting more expenditure than income. While more than 1/2 of the WSMTs in Akatsi, Ave Dakpa and Gefia area councils were able mobilize more funds than they expended last year, WSMTs in Avenorpeme and Wute were not doing well (See table 10)

**Table 10: Performance of WSMTs for point source in relation to financial management and accounting: Number of WSMTs meeting the benchmark**

	Akatsi n=14	Ave Dakpa n=28	Avenoperme n=14	Gefia n=32	Wute n=23	Total n=111
WSMTs whose annual income from sale of water exceeds total annual expenditure	10	14	6	24	10	64
WSMTs who practice sound financial management, account for funds and have their accounts audited	9	4	5	13	10	41
WSMTs who set water tariffs taking into account projected cost	0	0	3	0	2	5

Source: Akatsi District functionality and service monitoring data, 2011

The study also revealed that, less 1/2 of the WSMTs for point sources in the District managed their financial resource judiciously, accounted for funds and submitted their accounts for auditing. While about 2/3 of the WSMTs in Akatsi area council practiced sound financial management, less than 1/2 of the WSMTs in the remaining 4 area councils did same. The situation was worse in Ave Dakpa Area Council where just a few practiced sound financial management.

Ideally, water tariffs are set based on projected cost. This is to ensure that, all operational, minor maintenance and capital cost components are included in the tariffs. However, the baseline revealed that, only 5 out of the 111 of the WSMTs in Akatsi District set tariffs based on projected cost (See table 10). The remaining 106 were perhaps relying on other alternative ways of arriving at the tariffs, which are not recognized in the standard operating guidelines.

This low compliance in the use of life cycle cost approach in determining tariffs could be one of the reasons why a good proportion of the WSMTs were unable to realize more revenue than they expend in a year.

### 5.1.3 Performance of point source WSMTs on Operations

The core mandate of WSMTs include carrying out corrective and preventive maintenance on hand pumps, by way of procuring spare parts for the pumps, locating and arranging for the services of area mechanics and sometimes doing preventive maintenance themselves.

As stipulated in the CWSA guidelines and standards for operation and maintenance of hand pumps, there should be a national and decentralized spare parts distribution network in the country to facilitate repair work.

The baseline study in Akatsi District revealed that, about 1/3 of the WSMTs for point sources in the Akatsi District have never acquired spare parts, 1/3 are able to access spare parts as quickly as desired for repair work, while the remaining 1/3 are unable to access parts within acceptable time limit. Detailed analysis has further showed that about 2/3 of the WSMTs in Akatsi Area council were able to access spare parts within the acceptable time limit for corrective maintenance while only 1/3 of WSMTs in Ave Dakpa, Gefia and Wute were able to access part within the same period for corrective maintenance (See table 11). The reason may be that, Akatsi and Avenorpeme are closer to the city centers than the other area councils.

It is quite clear from the above that, reliability of hand pumps in Ave Dakpa, Wute and Gefia can be affected by the length of time it takes to acquire spare parts for repair work.

**Table 11: Performance of point source WSMTs in relation to operations: Number of WSMTs meeting the benchmark**

Operations	Akatsi n=14	Ave Dakpa n=28	Avenoperme n=14	Gefia n=32	Wute n=23	Total n=111
WSMTs who are able to access hand pump spare parts in good time for repairs	9	6	7	7	3	32
WSMTs who are able to access services of Area Mechanics in Good time for repair work	11	11	6	14	3	45
WSMTs who carryout corrective maintenance in effective way	8	8	6	10	3	35
WSMTs who carryout preventive maintenance in effective manner	12	19	9	26	18	84
WSMTs who conduct water quality sampling and analysis on half yearly basis using recognized institutions	0	0	0	0	0	0

Source: Akatsi District functionality and service monitoring data, 2011

WSMTs are required to access the services of Area Mechanics within a given time frame for corrective maintenance of their water facilities. The baseline survey in Akatsi District showed that, about 1/3 of the WSMTs had not procured the services of Area Mechanics before, a little above 1/3 procured services of Area Mechanics within three days, while the remaining 1/3 were unable to do same within 3 days. (See table 11 above).

The situation is best in Akatsi Area Council, where more than 2/3 of WSMTs met the benchmark on accessing area mechanics, while in Wute area council only just a few WSMTs indicated they could access services of area mechanics within acceptable time limit. It was also observed that majority of WSMTs in Avenorpeme, Gefia and Wute had not accessed the services of area mechanics before. This could be as a result of the fact that, preventive maintenance culture is good in those area councils or the facilities are relatively new.

The baseline observed that, generally the culture of corrective maintenance in Akatsi District was not good. While in Akatsi Area council little above 1/2 of the WSMTs carried out corrective maintenance effectively, less than 1/2 of the WSMTs in the remaining area councils carried out corrective maintenance in an effective manner. The situation is more precarious in Ave Dakpa and Wute area councils where less than 1/3 of the WSMTs are effectively carrying out corrective maintenance on their hand pumps (See Fig 18 above).

At the moment, it is difficult to establish conclusively the causes, but we can infer that, the effectiveness in corrective maintenance could be related to adequacy of funds in the accounts of the WSMTs, access to spare parts and area mechanics, since most of the WSMTs, especially those in Ave Dakpa and Wute area councils did not perform well in revenue mobilization, financial management, access to spare parts and services of



area mechanics. Further research work may be necessary in establishing the facts and finding solutions to the causes.

As given in the CWSA guidelines for the operation, preventive maintenance is required to be carried out on each hand pump at least once a year. As shown in table 11 above, about 2/3 of the wsmTs in the Akatsi District met the benchmark for carrying out corrective maintenance on hand pumps, while about 1/3 did not meet the benchmark on the same indicator. It is quite impressive that, nearly 2/3 of the wsmTs in all the area councils carryout preventive maintenance in effective manner. Perhaps, the high effectiveness in carrying out preventive maintenance could be resulting in hand pumps not breaking down frequently and requiring corrective maintenance. (See fig. 18 above).

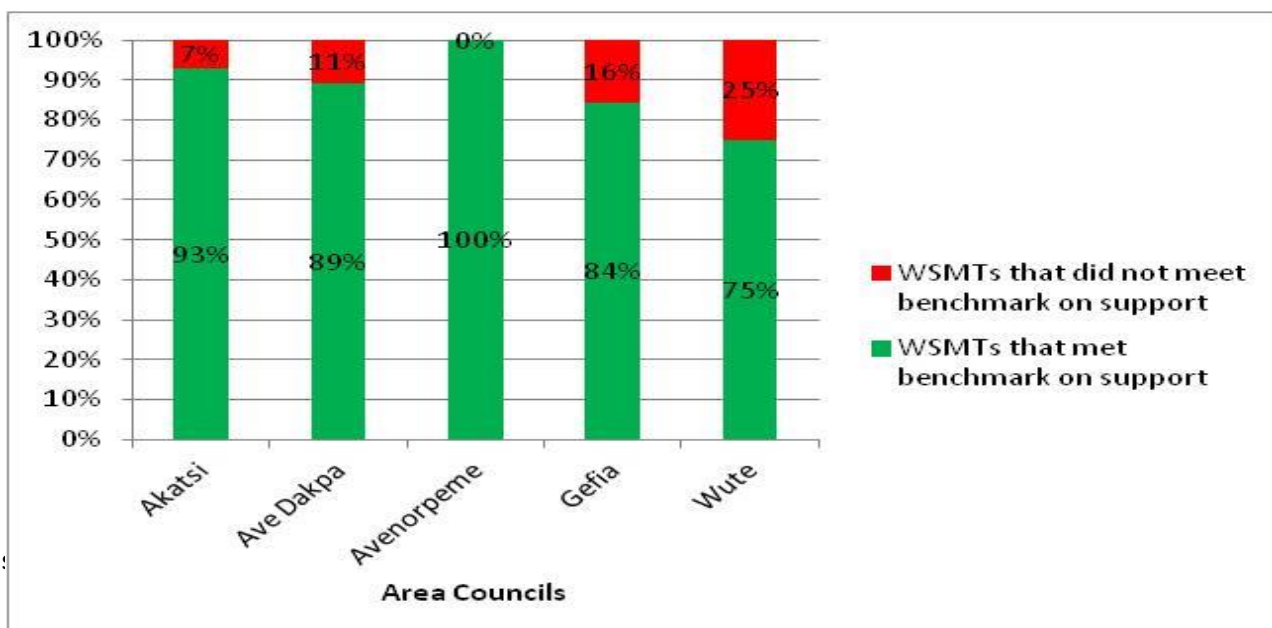
The sector guidelines, principles and standards stipulate that, potable water is supposed to be delivered to customers at GSB quality standards in an uninterrupted manner over the design period. The study showed that all wsmTs have not carried out water quality sampling and analysis over the past one year. In most cases, water quality analysis has not been done after the installation of the hand pumps. However, perceptions of water quality by users and service providers showed that, the water users were generally satisfied with the quality of water delivered by the facilities.

#### 5.1.4 Support Received by WSMTs from DWST

By the design of the Community Ownership and Management (COM) concept of rural and small town water and sanitation service delivery, operation and management responsibility of the water facilities have completely been ceded to the wsmTs, but with technical support and guidance from DWST.

As revealed by the study, on the general, the support received by wsmTs for point sources from the District Water and Sanitation Team (DWST) for effective operation, maintenance and management was good. The wsmTs indicated they received support from DWST ranged from 74% in Wute to 100% in Avenorpeme area councils (see fig. 14). Surprisingly, the good level of support received by the wsmTs in the District did not really translated into good performance of the wsmTs. Could it be that, the quality of monitoring and technical support provided to wsmTs was not good enough or that wsmTs were did not just have interest in performing their responsibly? It would be important to do further investigation to unravel the mystery.

Figure 14: DWST support to WSMTs for point sources



## 5.2 Service Provider: Water and Sanitation Management Teams for small towns

### 5.2.1 Overview of small town WSMT Performance

There are 6 Water and Sanitation Management Teams operating and managing 6 piped systems in Akatsi District. The six WSMTs include, Akatsi, Ave Dakpa, Avenorpedo, Dagbamete, LumeAvete, and Wlitye/Alagbokope. (Table 12). Wute is the only Area council in the Akatsi District that does not have a piped system.

**Table 12: Distribution of piped system WSMTs by Area/Town council**

		Area Council				
		Akatsi	Ave Dakpa	Avenorpeme	Gefia	Grand Total
WSMTs	Akatsi	1				1
	Ave Dakpa		1			1
	Avenorpedo			1		1
	Dagbamete			1		1
	LumeAvete				1	1
	WlityeAlagbokope				1	1
<b>Grand Total</b>		<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>6</b>

Source: Akatsi District functionality and service monitoring data, 2011

The Baseline study in the Akatsi District assessed the performance of all the six piped systems WSMTs using similar parameters or indicators as in the case of the WSMTs for point sources. The parameters included governance and general management, operations, financial management and support received by WSMTs from DWST or District Assembly.

### 5.2.2 Governance and general management

As clearly identified in the operational guidelines and standards of CWSA for operation, maintenance and management, piped systems are supposed to be managed by Water and Sanitation Management Teams. The WSMTs can manage the system directly using technical operating staff or by engaging private operator. In all cases WSMTs shall have well qualified, trained and gender balanced membership elected by the community.

As shown in table 13 below, none of the 6 WSMTs met the benchmark for the presence of well qualified and trained and gender sensitivity. This implies all WSMTs for small towns in the District are not well constituted and lack requisite management expertise to operate and maintain the pipe systems in an acceptable manner.

Table 13: Performance of WSMTs in relation to governance

Governance	Akatsi	Ave Dakpa	Avenorpedo	Dagbamete	LumeAvete	WlityeAlagbokope
Met benchmark on presence of well qualified trained and experienced gender balanced WSMT	No	No	No	No	No	No
Met benchmark on keeping administrative, technical and financial reports and reading to communities at least every six months	Yes	Yes	Yes	Yes	Yes	No
Met benchmark on composition of WSMTs influenced by political leaders or chiefs	Yes	Yes	Yes	Yes	Yes	Yes
Met benchmark on organizing meetings regularly and keeping minutes	Yes	Insufficient data	Yes	Yes	Yes	No

Source: Akatsi District functionality and service monitoring data, 2011

As required by the guidelines for operation, management and maintenance of piped systems, all WSMTs are supposed to keep technical, administrative and financial reports and share them with their respective communities on half yearly basis. Regarding the keeping of technical, administrative and financial reports, which are read to their respective communities on half yearly basis, the baseline study observed that 5 out of the 6 are keeping records and sharing with their respective communities in an acceptable manner. The only WSMT which did not meet the benchmark on the indicator is the Wlitye Alagbokope WSMT. It is however unclear, as to whether the WSMT is able to meet its operational cost or not. It is also interesting to note that, the water facility was not constructed under the supervision of the District Assembly or CWSA.

The constitution and change of members of WSMTs is solely the prerogative of the community members with technical guidance and supervision of the partner organizations (PO), DWST and the Regional Office of CWSA. All nominations or replacements are supposed to be devoid of political or chieftaincy interference and considerations. When the WSMTs for small towns in the Akatsi District were assessed against the indicator of chieftaincy and political interference in the composition of the teams it was realized that, all of them met the benchmark, implying there was no political and/or chieftaincy interference in the composition/ replace of WSMTs members in the last year.

As per the model byelaws guiding the operations of piped systems, WSMTs are required to conduct meetings at least twice in a year to deliberate and take decisions regarding operations and management of their respective water systems. The baseline study revealed that, apart from WlityeAlagbokope and Ave Dakpa, the remaining 4 WSMTs in the district met the benchmark for holding meetings and keeping minutes. The WlityeAlagbokope WSMT did not meet the benchmark, while Ave Dakpa WSMT did not present enough data for the benchmark determination.

### 5.2.3 Operations of WSMTs

The operating principles and guidelines of the WSDBs requires that they are effectively linked to the private sector (spare parts outlets and area mechanics) for provision of goods and services during and after construction of the water facilities. The baseline study observed that, three out of the six WSMTs in the Akatsi District are always able to access spare parts and services of area mechanics for maintenance and repair works of the water facilities as and when the need arises. These three WSMTs have therefore met the benchmark on accessing the services of private sector. On the other hand, the remaining three WSDBs indicated they are sometimes able to access spare parts and area mechanics, but not always, which renders them ineffective in responding appropriately to corrective maintenance (See table 14).

**Table 14: Performance of WSMTs in relation to Operations**

Operations	Akatsi	Ave Dakpa	Avenorpedo	Dagbamete	LumeAvete	WlityeAlagbokope
Benchmark met on private sector provides needed support to WSMTs	Yes	No	Yes	Yes	No	No
Benchmark met on WSMTs prepares and implement maintenance schedules	No	No	No	No	No	No
Benchmark met on water quality sampling and analysis performed on half yearly basis by a recognised institution	No	Yes	No	No	No	Yes

Source: Akatsi District functionality and service monitoring data, 2011

At the beginning of each calendar year, each wsmt is by the operating guidelines required to prepare a maintenance schedule alongside its budget and tariff and use the schedule as a guide for maintenance of the water facility. The study however observed that, none of the six wsmt's prepares maintenance schedules or implement maintenance according to schedule. They carry out maintenance as and when they feel it is necessary without any time schedule. Based on this observation, coupled with the absence of Operation and Maintenance (O&M) manuals in some instances, made all the wsmt's to fail on meeting the benchmark for the indicator (See table 14 above).

One of the core responsibilities of the wsmt's is to deliver water of acceptable quality (standards of Ghana Standards Board) to the inhabitants of their communities. Ideally, wsmt's are therefore required to facilitate the conduct of water quality sampling and analysis on their water systems on half yearly basis by a recognized and certified institution. Out of the six wsmt's interviewed, only Ave Dakpa and WlityeAlagbokope wsmt's met the benchmark (See table 14 above). However, all wsmt's perceive quality of water they deliver to their communities as being acceptable.

### 5.2.4 Financial management

Water and Sanitation Management Teams are semi-autonomous and are required to generate enough revenue through the sale of water to cover their operational cost, sanitation cost and carry out expansion works, capital maintenance and replacement of parts. When all the six wsmt's were assessed on whether or not they generated more income than their annual expenditure, it was observed that, 5 out of the 6 they were all posting more income than expenditure. The WlityeAlagbokope WSDB did not keep sufficient data to be assessed on the indicator. (See table 15)

Table 15: Performance of WSDBs in relation to financial management and accounting

Financial Management	Akatsi	Ave Dakpa	Avenorpedo	Dagbamete	LumeAvete	WlityeAlagbokope
Benchmark met on annual incomes from sale of water exceeds annual expenditure	Yes	Yes	No	Yes	Yes	Insufficient data
Benchmark met on sound financial management, accounting and auditing	No	No	No	No	No	No
Tariff setting take into account projected cost	No	Insufficient data	No	No	No	No
Benchmark met on Interference of MMDA in setting of water tariffs	Yes	Insufficient data	Yes	Yes	Yes	Yes

Source: Akatsi District functionality and service monitoring data, 2011

As per the guidelines and financial management arrangements, all WSMTs for piped systems are supposed to maintain three district accounts as sanitation, operational and capital maintenance accounts and submit them for annual auditing. The baseline study established that, all the WSMTs do not operate distinct operational, sanitation and capital maintenance accounts as required by the operating guidelines. As a result those that generate more income than expenditure may seem to be doing well now, but are really not saving for expansions and capital maintenance. And as has always been the case, if there is a major breakdown of any of the systems they may not be able to fix it immediately without external capital injection. All the WSMTs in the Akatsi District are therefore not financially sufficient or independent.

As in the case of WSMTs for point sources, WSMTs for small towns are supposed to set water tariffs based on projected cost of their operations. The baseline study however discovered that except for Ave Dakpa where there was insufficient data, the rest of WSMTs did not build projected cost into their water tariffs. This could be one of the reasons why they are all unable to operate capital maintenance accounts.

Again, after water tariffs have been determined by the WSMTs, they are supposed to be presented to communities and district assemblies for discussion and approval. It is also expected that, if any District Assembly demands for downward adjusted of set tariffs, it must be prepared to take care of the difference between the original and the adjusted tariff. And if a District Assembly asks for adjustment in tariff and fails to pay up to 50% of difference the WSMTs does not meet the benchmark for interference of MMDAs in tariff setting. The baseline survey revealed that, apart for Ave Dakpa, where there was insufficient data to make a determination, the rest of the five met the benchmark on the indicator, meaning there were no interference in the setting of WSMTs tariffs by the District Assembly

### 5.2.5 Support received by the small town WSMTs from DWST

In order for the WSMTs to discharge their operational and management responsibilities effectively they require technical support and guidance from the DWST. As such the DWST have the obligation of providing technical support to all WSMTs for the operation and management of their water facilities.

The baseline study in the Akatsi District observed that, all the WSMTs for small towns in the district were receiving adequate and regular support from the DWST. It was however observed that, the good support provided by the DWST did not translate into good performance of the WSMTs.

## 6 Results: Performance of service authority

### 6.1 Presence of DWST

The guidelines for operation and maintenance of rural communities and small towns water and sanitation systems, requires each District Assembly to have a well-qualified, trained and resourced District Water and Sanitation Team (DWST), to continuously provide support to service providers (WSMTs). By their role, the prescribed membership of the team is a technician engineer, an environmental health officer and a community development specialist. The baseline survey in Akatsi District however observed that, the DWST lacked representation from community development office and therefore did not meet the benchmark on constitution of the team. The team had received first training on their roles and responsibilities but had not been retrained since its constitution.

### 6.2 Monitoring and data flow

During the baseline study, the Akatsi DWST indicated they have collected static data on some of the water facilities and inputted into District Monitoring and Evaluation System (DIMES). They also indicated that, through the support of the Environmental Health Assistants (EHAs) seconded to the office off the DWST, they are able to conduct quarterly monitoring of operations and maintenance of water facilities, which enables them collect data on O&M for storage in DIMES as well as for District and Regional level planning.

### 6.3 District level budget allocation and utilization

The Akatsi District had a District Water and Sanitation Plan (DWSP) and annual budget for water and sanitation investments and operational cost. In 2011, the District allocated GHC 28,580.00 for water and sanitation investment in their annual budget, but only release GHC9000.00 and 10,000.00 for operations and capital investment respectively. Based on the above data, the District met the benchmark on the indicator for budget allocation and utilization.

### 6.4 Facility management plans and by-laws

The baseline study observed that, there were Facility Management Plans (FMPs) that governs the operations of WATSANs/WSDBs in the Akatsi District. They were however not updated on annual basis. There were also no by-laws in place to legalize and regulate WATSANs/WSDBs. On this score, the district did not meet the benchmark on the indicator.

### 6.5 Coordination of NGOs

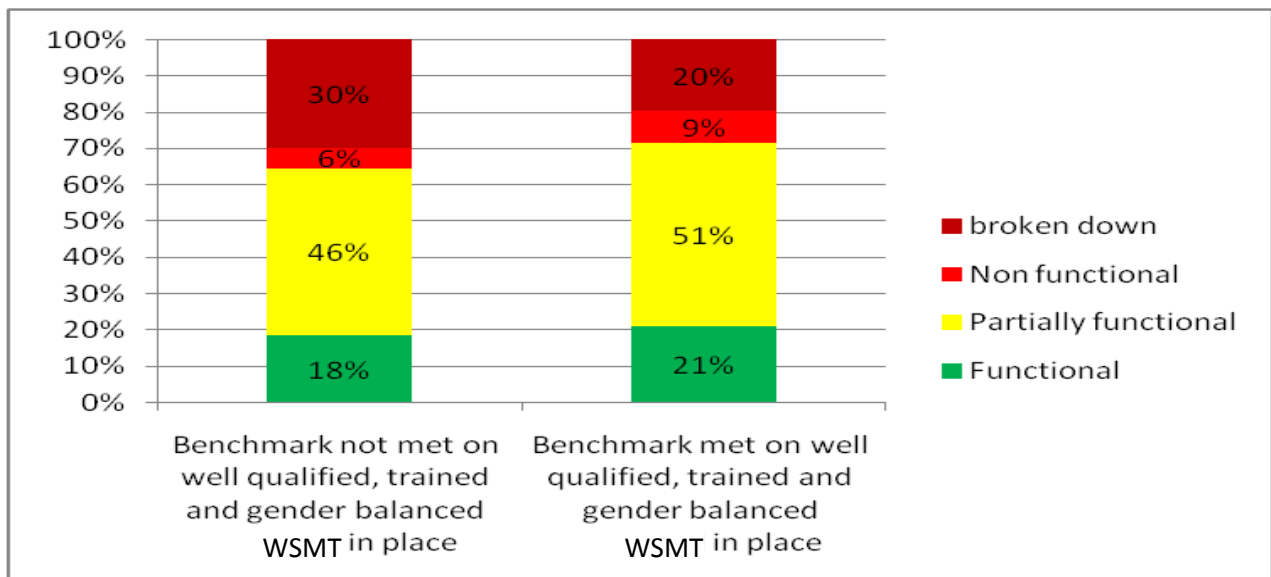
During the study it was realized that, there is only one NGO actively implementing water and sanitation activities in the District. The NGO informs the District of its implementation of activities, aligns its operations with the DWSP and provides data on new water systems to the office of the DWST. By its operational agreement with the Akatsi District assembly, the NGO is required to provide the water infrastructure, while the District Assembly takes care of the software issues and by that, they sometimes skip some of the steps and processes prerequisite for water facility provision and hence deviating from the standards, norms and guidelines set for provision of water services.

## 7 Results: how do support, service provider and service level indicators relate to each other?

### 7.1 Presence WSMTs and Hand pump functionality

There seems to be a bit of positive relationship between the presence of well qualified, trained and gender balanced WSMT and hand pump functionality. In communities where the benchmark was not met for well qualified, trained and gender balanced WSMT in place, percentage of completely broken facilities was as high as 30%. On the other hand where the benchmark for the indicated was met, the percentage reduced to 20%. (See figure 15)

Figure 15: Presence of WSMT and hand pump functionality

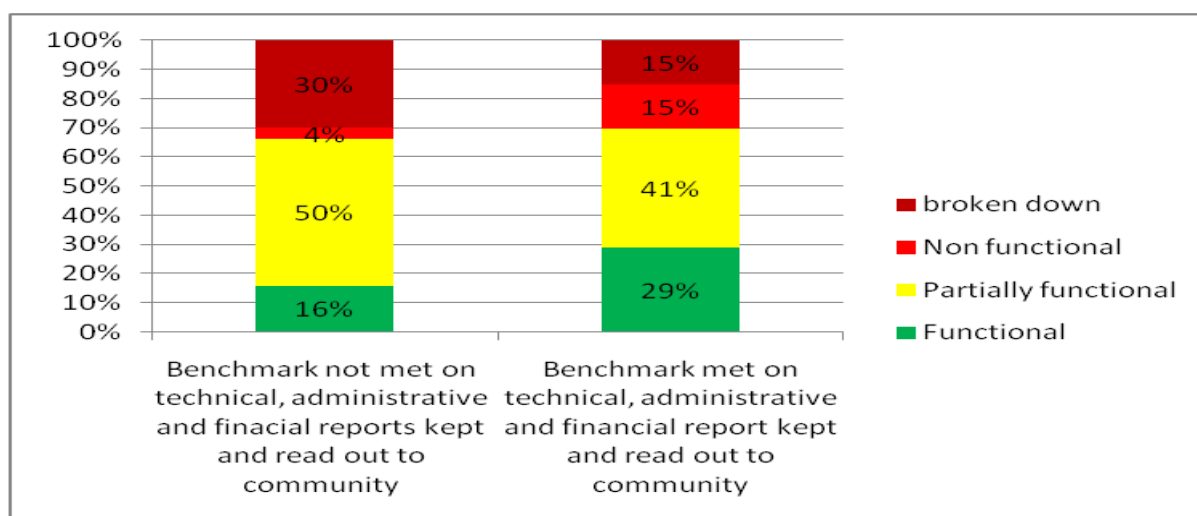


### 7.2 Records keeping and hand pump Functionality

As directed by the guidelines, WSMT are required to keep records of all their operations, including financial transactions and maintenance and reporting to their respective communities, at least on half yearly basis.

The baseline survey in Akatsi District, observed that, where records were not kept properly and read out, hand pump functionality was as low as 16%. On the other hand where records were kept and read out to the community as directed, hand pump functionality was 29%. This shows that there is direct relationship between records keeping and hand pump functionality. (See figure 16)

Figure 16: Records keeping and hand pump functionality

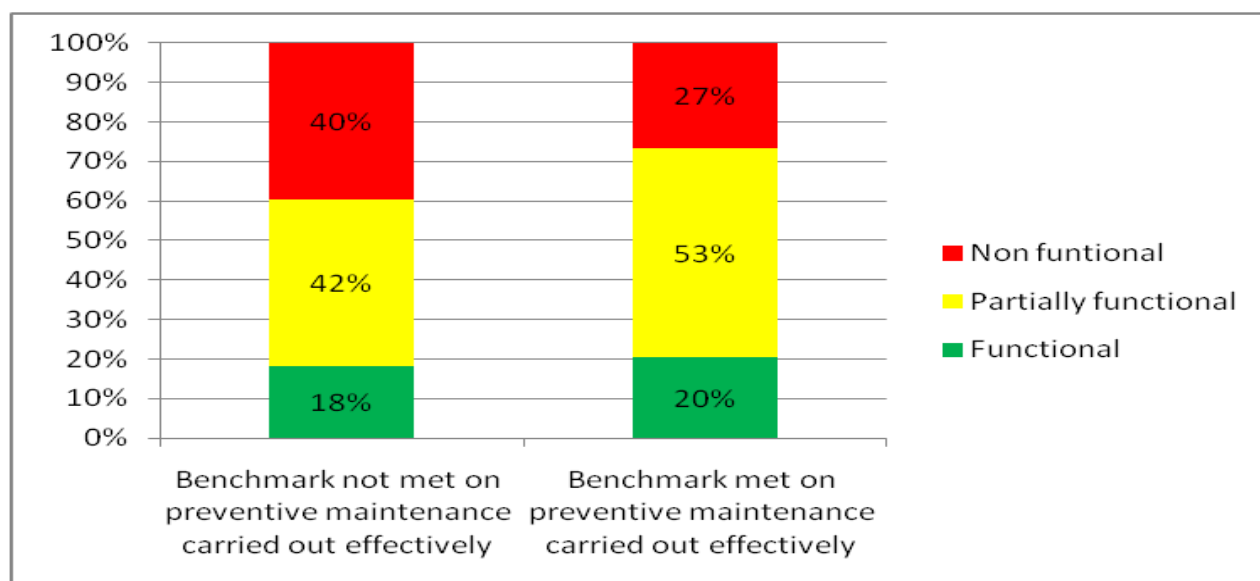


Source: Akatsi District functionality and service monitoring data, 2011

### 7.3 Relationship between preventive maintenance and functionality

There seem to be strong correlation between preventive maintenance and hand pump functionality. In situations where the benchmark for preventive maintenance was not met, non-functionality of facilities was as high as 40%. In communities where benchmark was met on preventive maintenance, non-functionality was reduced to 27%. This is suggestive of the fact that, if WSMTs carry out preventive maintenance effectively, water facilities may not break down as often they will if the opposite happens (see fig. 17).

Figure 17: functionality and Preventive maintenance



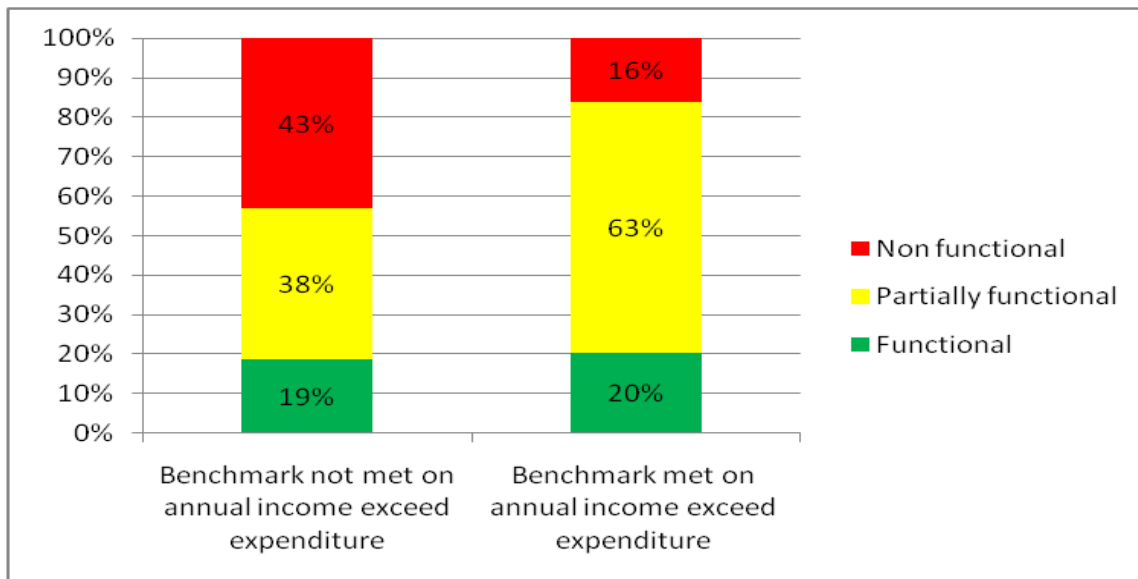
Source: Akatsi District functionality and service monitoring data, 2011



## 7.4 Functionality and revenue

There is a strong positive relationship between availability of funds and water facility functionality. In Communities where WSMT expenditure exceeded annual income, non-functionality of hand pumps was as high as 42%. In situations where the annual income exceeded expenditure, non-functionality was as low as 16%.

Figure 18: Functionality and revenue



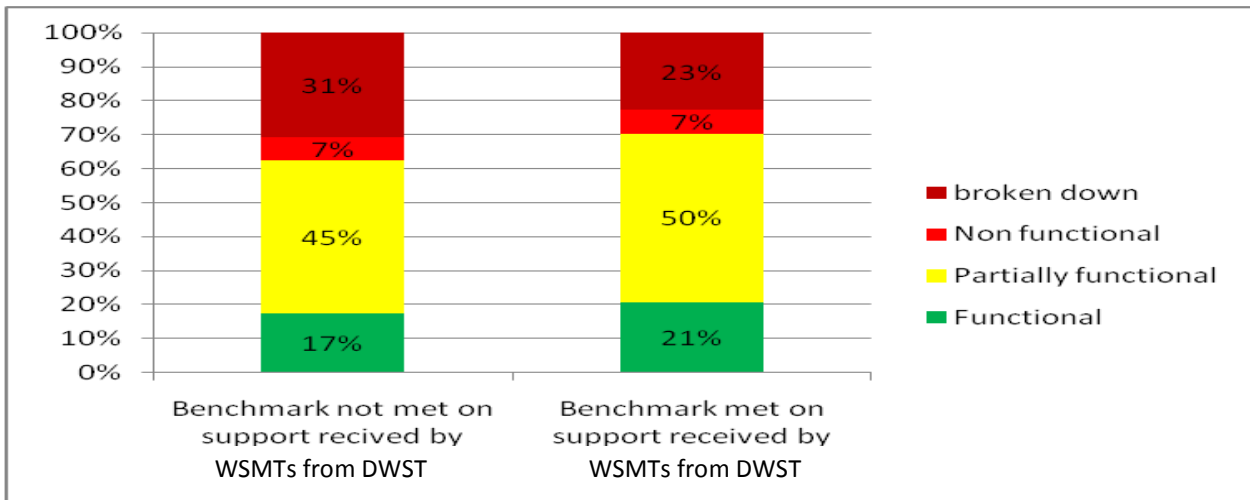
Source: Akatsi District functionality and service monitoring data, 2011

## 7.5 Support and functionality

For effective operation, maintenance and management of the water facilities, WSMTs require technical support and direction from the District Assemblies through their DWSTs.

As revealed by the Survey in the figure 27 below, in situations where WSMTs did not receive support non-functionality of hand pumps was as high as 31%, but where support was provided non-functionality reduced to 23% broken down water facilities.

Figure 19: Support and functionality



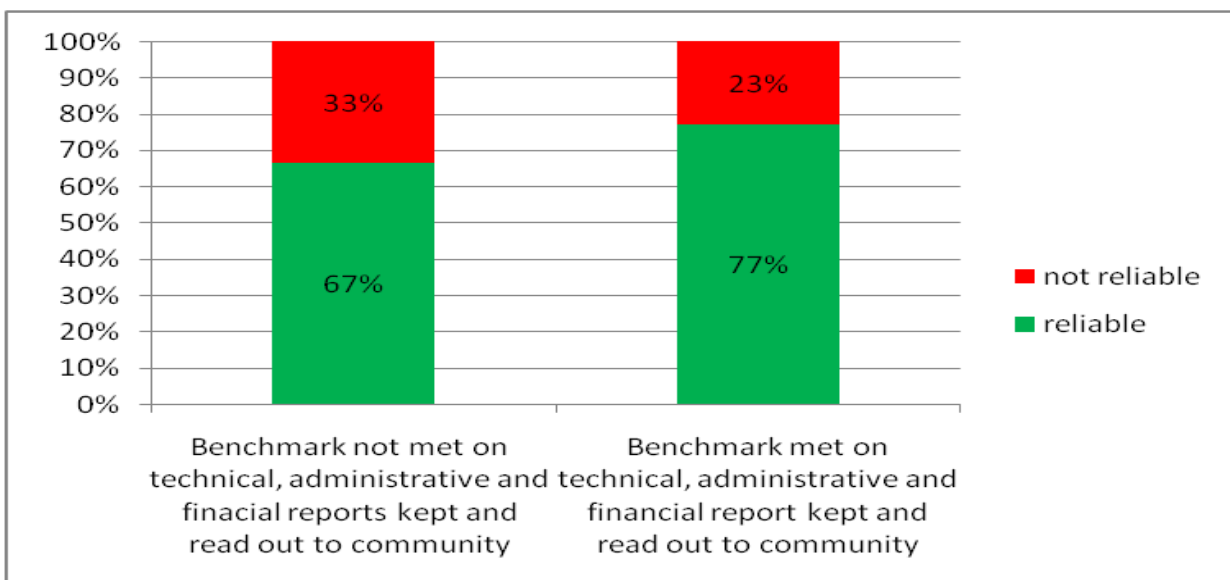
Source: Akatsi District functionality and service monitoring data, 2011

## 7.6 Records keeping and reliability

WSMTs have the responsibility of operating, managing and maintaining water facilities to ensure that they function and deliver reliable water service to their communities.

As shown in the figure below, when benchmark was not met on records keeping 67% of the hand pumps were reliable and provided service 95% of the time, but where WSMTs met the benchmark on records keeping, reliability of hand pumps rose to 77%. This suggests records keeping and sharing is significant for reliability of hand pumps (See fig 20).

Figure 20: Records keeping and reliability



Source: Akatsi District functionality and service monitoring data, 2011

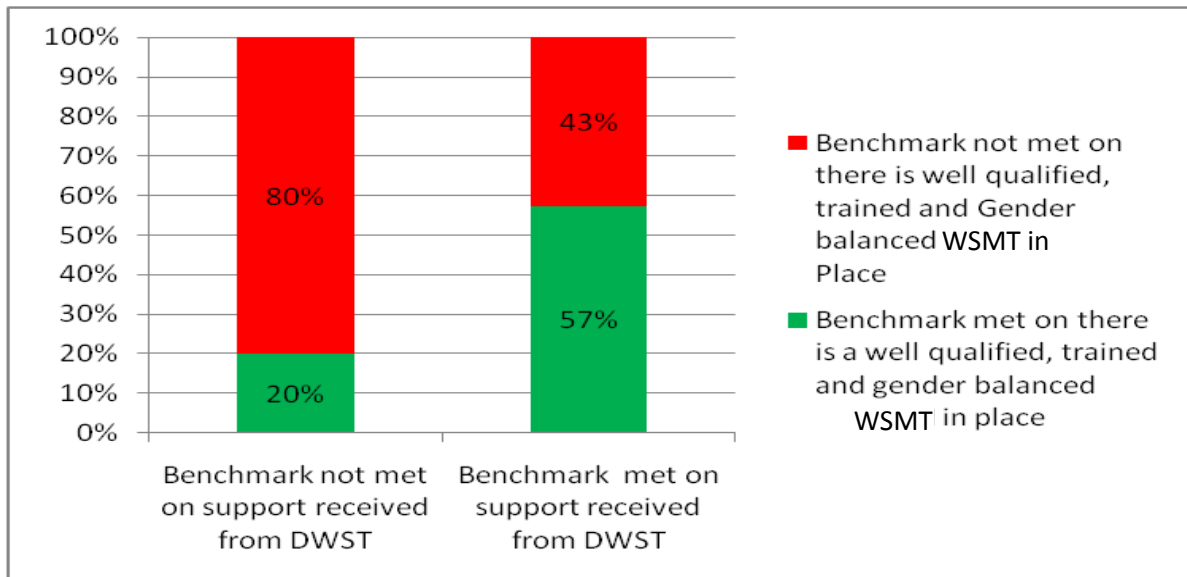
## 7.7 Support and composition of WSMTs

One of the cardinal functions of the DWST is to ensure that, every hand pump has a well constituted, trained and gender balanced WATSAN for effective operation and management of the water facility.

During the study, it was realized that, only 20% of the communities that received irregular or no monitoring visits maintained well qualified, trained and gender balanced WSMTs. However, where communities receive regular supportive visits from DWST, more than half of WSMTs were well qualified, trained and gender balanced. (See figure 21)

This is therefore suggestive of the fact that, if DWST maintains constant contact with the communities they are more likely to have WSMTs in place than situations where communities do not receive monitoring visits at all.

Figure 21: Support and presence of WSMTs



Source: Akatsi District functionality and service monitoring data, 2011

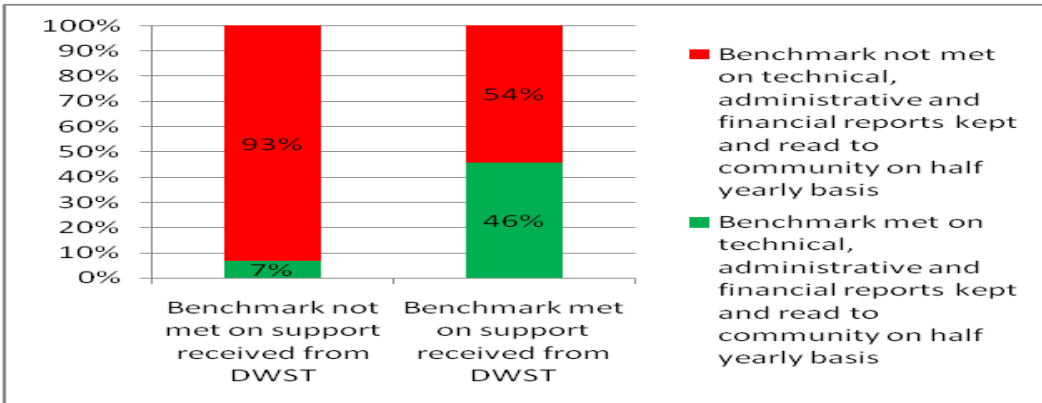
## 7.8 Support and Records Keeping

WATSANs are mandated to keep records of all operations and read to their respective communities on half yearly basis. It is also the responsibility of the DWST to support WSMTs to keep and maintain records of their operations.

The baseline survey recorded that, where DWST did not provide support to WSMTs only 7% kept good records and therefore met the benchmark on keeping technical, administrative and financial report and reading to communities on half yearly basis. In the case of those who received adequate support from DWST, as much as 46% kept records well and accounted to their communities.

The relationship here is also suggestive of the fact that, record keeping culture of WSMTs can improve if they receive adequate monitoring visits from DWSTs.

Figure 22: Support and records keeping



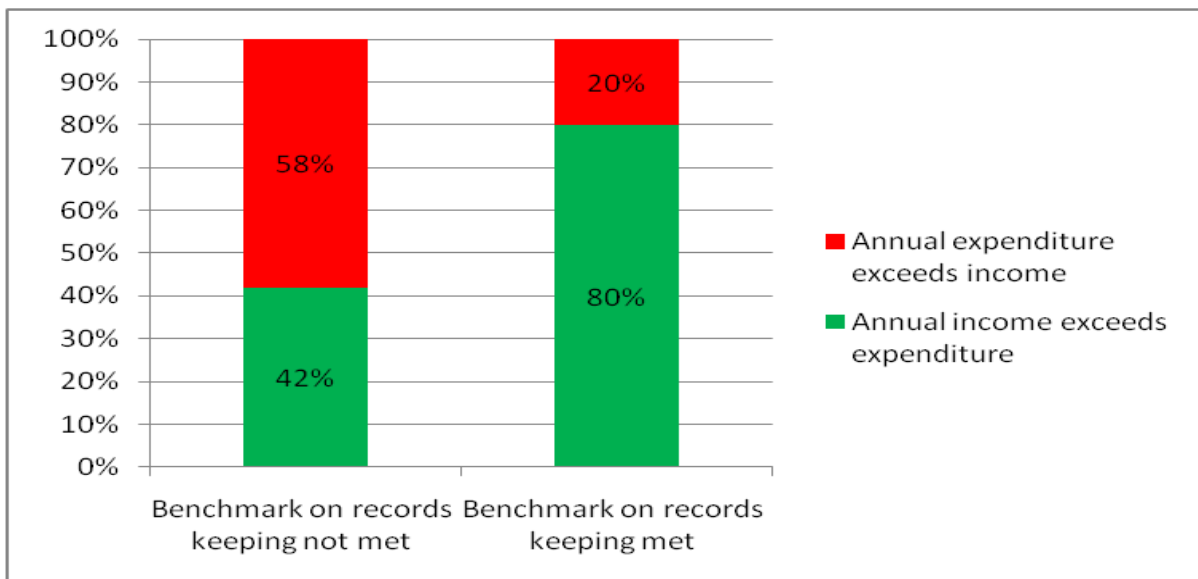
Source: Akatsi District functionality and service monitoring data, 2011

### 7.9 Records Keeping and Revenue mobilization

It is expected that, if documentation of operations of service providers are up to date and there is transparency and accountability to community members and District Assembly, there will be prudent financial management and which will intend ensure that, WSMTs are able to raise more revenue than their annual expenditure.

The WSMT survey in Akatsi has confirmed that, where records were not kept and or updated and accounts read to communities regularly, 48% of the WSMTs posted more revenue than expenditure, but in situations where records were kept, updated and read to the communities on regular basis, 80% of the WSMTs posted more revenue than expenditure. It is evident therefore, that, records keeping, transparency and accountability have direct and positive bearing on revenue mobilization and financial management.

Figure 23: Records keeping and revenue mobilization



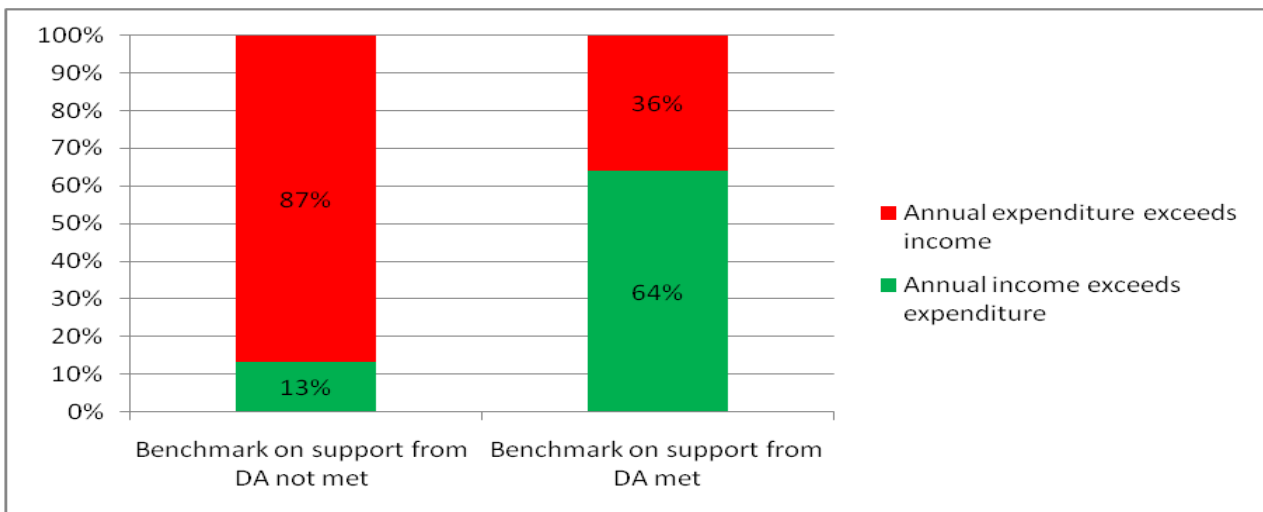
Source: Akatsi District functionality and service monitoring data, 2011

### 7.10 Support and Revenue mobilization

In a similar analysis between support received from DWST and revenue mobilization, it was discovered that, where benchmark on support was not met, only 13% of WSMTs mobilized more revenue than their expenditure. However, where WSMTs met the benchmark on support, 64% of them generated more revenue than their expenditure.

This is indicative that of the fact that, if WSMTs are given adequate support, they can mobilize enough funds from sale of water to meet O & M cost without external capital injection.

Figure 24: Support and revenue mobilization



Source: Akatsi District functionality and service monitoring data, 2011

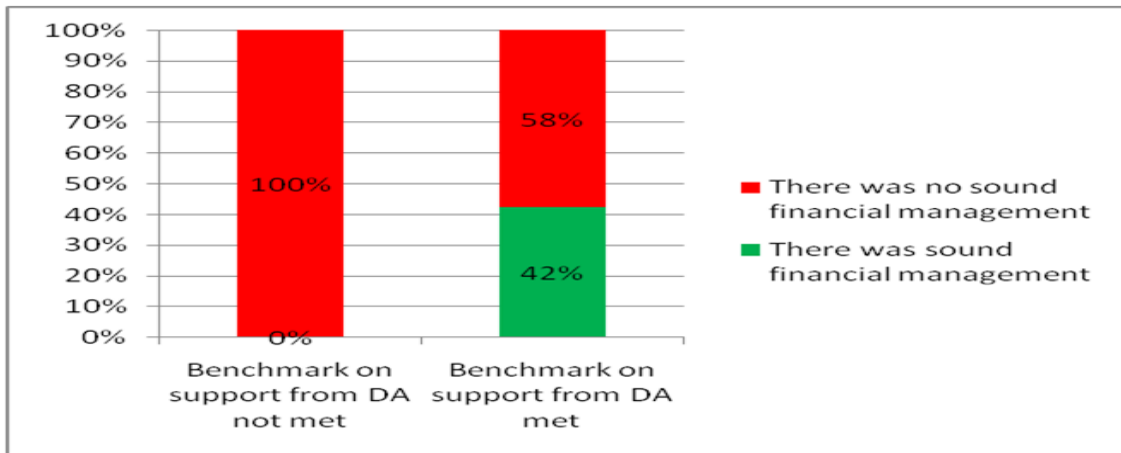
### 7.11 Support and sound financial management

It is also expected that, if a District Assembly through its District Water and Sanitation Team shows interest in the operations of WSMTs and provides technical support and direction in management of water facilities, WSMTs will effectively manage and account for funds accruing from sale of water to their communities and service authorities.

The study showed that where WSMTs were not receiving adequate support from DWST, they never managed finances prudently. On the other hand, 48% of those who received support at least managed their funds judiciously.

It is then very clear that, if WSMTs are given the requisite technical support, including annual auditing, they will manage their funds appropriately.

Figure 25: Support and sound financial management



Source: Akatsi District functionality and service monitoring data, 2011

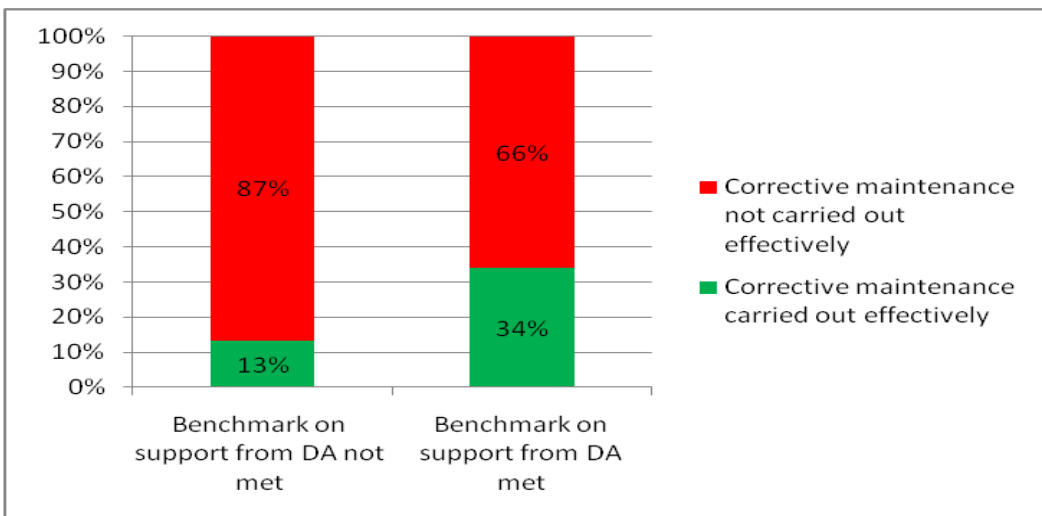
### 7.12 Support and effectiveness of Corrective maintenance

It is also presumed that, WSMTs who receive regular monitoring visits and technical support from the DWST are much more likely to respond quickly to broken down water facilities than those in otherwise situations.

As shown in Figure 35, the baseline results showed that, where WSMTs were not receiving support from DWST, only 13% of them responded appropriately to borehole breakdowns. On the other hand where WSMTs received support from DWST, 34% of them responded to breakdowns as directed by the operating guidelines and standards.

The data is therefore suggestive that, for effective corrective maintenance to be carried out on water facilities, it is imperative that, DWST conduct adequate monitoring visits to water facilities and WSMTs.

Figure 26: Support and corrective maintenance



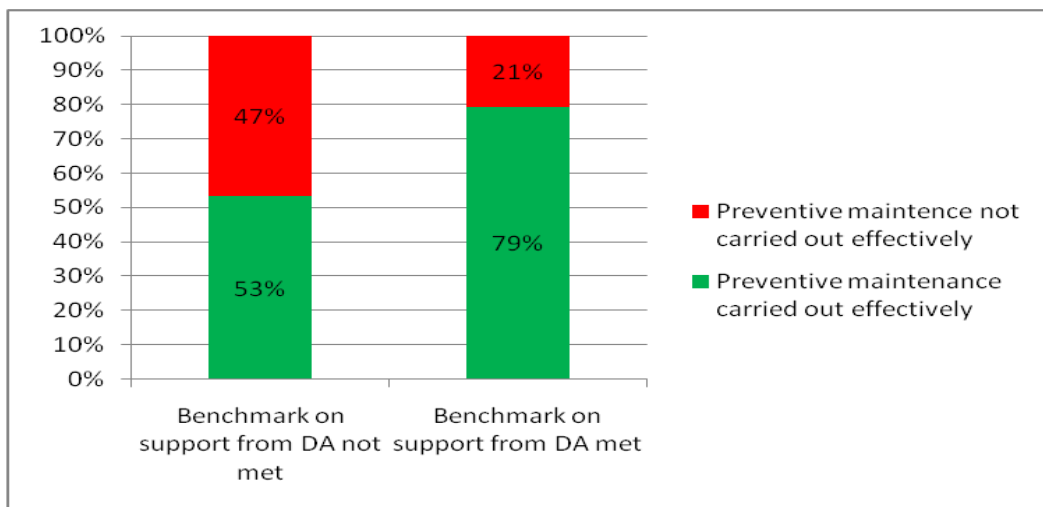
Source: Akatsi District functionality and service monitoring data, 2011

### 7.13 Support and effectiveness of preventive maintenance

Generally, WSMTs for point sources who receive regular monitoring visits are much more likely to carry out effective preventive maintenance on their water facilities. The baseline study revealed a similar trend where about a half of WSMTs who did not receive supportive visit from DWST performed preventive maintenance appropriately. However in situations where WSMTs received support from the DWST, almost 80% of them conducted preventive maintenance effectively.

It can therefore be deduced that, WSMTs receiving regular monitoring and supportive visits will perform preventive maintenance effectively.

Figure 27: Support and Preventive maintenance



Source: Akatsi District functionality and service monitoring data, 2011

## 8 Conclusions and Recommendations

### 8.1 Conclusions

The Community Owner and Management (COM) concept which defines the route for water and sanitation service delivery in rural and per urban segments of Ghana has clearly articulated the procedures, guidelines and standards for sustainable water service delivery. Service delivery is therefore the provision of water infrastructure with a competent management institution, delivering water of a given quantity and acceptable quality and within a given distance to the community members.

The baseline survey however detected that, the practices of certain service providers contravened the set norms and standards for sustainable service delivery.

More than 30% of the Hand pumps in the Akatsi are without any form of management institutions for effective operation, maintenance and management. This contravenes the basic principles of Community Ownership and Management and presents a very serious challenge to sustainability of the water facilities.

Over the course of last year, all the WSMTs for small communities and two thirds of WSMTs for small towns have not conducted water quality sampling and analysis on their water facilities, which is at variance with the requirements for sustainable rural water service delivery. The quality of water delivered by the water service providers to the users in the district cannot be guaranteed under practices.

All WSMT for small town systems are not keeping and operating distinct sanitation, recurrent and capital accounts as set out in the guidelines for operation and management of pipe systems. They are all operating only operational accounts and in the event of major break down the WSMT might not be able to handle the situation alone.

Water and sanitation service delivery in Akatsi District is largely driven by donor funded projects and NGOs operating in the district with minimal participation and coordination by the District Assembly. As the role of the District Assembly is not clearly defined in the implementation of water and sanitation projects, coordination and harmonization is a big challenge and its affecting alignment of project implementation to sector guidelines and policies.

Quite a significant proportion of WSMT for hand pumps in the District have not met the benchmark on financial management. As annual auditing is not being carried out, all WSMTs are not motivated to keep records and render accounts to their respective communities on half yearly basis as required. This could as well be the reason for a significant proportion of WSMTs for hand pumps are spending more than they are able to generate in a year.

There is an established positive link between functionality of hand pumps and WSMTs records keeping, revenue mobilization, preventive maintenance and support received by WSMTs from DWST. It is therefore very important for the Akatsi District Assembly to innovate a mechanism to ensure that, WSMTs keep acceptable levels of records and account for all funds to their communities.

In order to ensure that sustainable water services are delivered to the communities, the Akatsi District Assembly must create adequate enabling environment for effective operation and management of water facilities and insist on compliance with service standards and practices as stipulated in the guidelines.



## 8.2 Recommendations

Based on the findings and results of the baseline survey, the following recommendations are made for improvement in water facility functionality and performance of service providers and general service delivery:

1. Over 50% of the boreholes in Akatsi Town council are located more than 500m away from the entire populations of the communities depending on them, making inhabitants covering more distances to collected water than their counterparts in the other area councils. We are therefore recommending that, the District Assembling together with other water sector partners operating in the District explore ways of drawing water from the existing water facilities closer to the communities.
2. In order for the Avenorpedo and WlityeAlagbokope piped systems management to be able to accurately determine amount of water produced and account for revenue from sale of water properly, there is need for immediate procurement and installation of the bulk and stand pipe meters to both piped systems
3. The survey findings has shown that, majority of the WSMTs for point sources in Ave Dakpa, Avenorpeme and Wute area councils do not keep proper records, post more expenditure than revenue and do not practice sound financial management. We are therefore recommending capacity building of WSMTs in the affected Area councils in the area of records keeping and financial management. It is also recommended that, EHAs intensive financial monitoring of WSMTs in the three area councils.
4. Given the fact that, service providers are not carrying out water quality sampling and analysis as directed in the CWSA guidelines for rural water service delivery, the District Assembly should ensure that all water service providers caary out water quality as required.
5. The WlityeAlagbokpe WSMT for small town is consistently failing on service provider performance indicators, and as such will require proper investigations and technical support from the District Assembly and CWSA, otherwise, it could be heading towards a system collapse
6. The baseline observed that all the WSMTs for small towns do not keep and main the three distinct accounts as directed by the guidelines and standards. In order for the WSMTs to be able to save for major repairs, expansions and replacement, the District Assembly should ensure that all WSDBs operate and maintain the three distinct accounts as; capital, sanitation and operational accounts.
7. The study revealed that, most of the WSMTs for point sources in Wute, Ave Dakpa and Gefia could not access spare parts and the services of area mechanics within acceptable time limit to carry out corrective maintenance. It is therefore very important, to strengthen the supply chain and technical services in those area councils. As such, it being recommended that two more area mechanics be trained for Ave Dakpa and Wute Area councils.

## 9 References

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VRCWSA, 2011. Annual Report