



Kpoglu community report

Cost of water and sanitation services in Kpoglu in the Ketu South district

Kpoglu community with a population of 334 has two functional water facilities, one borehole with handpump and a limited mechanised system. Only 40 % of the respondents receive the basic water level of service or better based on quantity accessed, access by distance and crowding –with-reliability.

Sanitation coverage in the community is 24%. About 48% of the respondents and their members resort to open defecation, and dig and bury practise.

October 2012

Acknowledgement

This report acknowledges the effort of the following groups and persons in contributing to the research work both on and off the field:

The writing team for the WASHCost community reports consisted of: Bernice Donkor-Badu, Eugene Appiah-Effah, Kwabena B. Nyarko, Bismark Dwumfour-Asare, Patrick Moriarty, Alex Obuobisa-Darko, Victor Narteh Otum, Nick Dickinson and Kwaku A. Adjei

The following people contributed to the field work and are gratefully acknowledged below:
The entire WASHCost Ghana team

Research Assistants: Dwuodwo Yamoah-Antwi, Philip Osei Banahene, Bernice Donkor-Badu, Samuel Asare Adjebeng; Catherine Oduro and Olivia Bushell

Volta Region Community Water and Sanitation Agency (VR-CWSA) Team

Ketu South District Water and Sanitation Team and Planning Officer

Enumerators: Fudzi Frank, Sefe Eric Mensah, Ivy Berchie, Augusta Amenyah, Bartholomeau Ahetey, Vincent Deano, Fudzi Priscilla, Nelson Ocloo-Avenor.

Area mechanic: William Mensah Dufe
Kpoglu WATSAN Committee and Community Members

Drivers
(KNUST drivers: Mr. Samuel Ansere, Mr. Edward Addai, Mr. Joseph Asare)
(VR-CWSA driver: Adzivor Felix)

Lead author's contact details:

Dr. Kwabena B. Nyarko
Civil Engineering Dept, KNUST, PMB UP, Kumasi-Ghana.
T: +233(0)322064396; M: +233(0)208165515;
Email: nyarko.k.b@gmail.com

Front Page Photo

Peter McIntyre/Victor Narteh Otum /WASHCost Ghana

WASHCost has been undertaking an action research focusing on quantifying the cost of providing sustainable water, sanitation and hygiene (WASH) services in rural and peri-urban areas in Ghana. This community report presents findings of research carried out in the community of Kpoglu in the Ketu South District of Ghana.

The WASHCost team visited the Kpoglu community in April 2010 to collect data on the WASH services received by the inhabitants and the cost of providing the services. The community has a population of 334 people according to the Regional Community Water and Sanitation Agency records for 2009. The inhabitants are of the Ewe tribe and predominantly subsistence farmers. Most of the community members are also engaged in gari processing and trading as a means of generating income for the upkeep of their households.

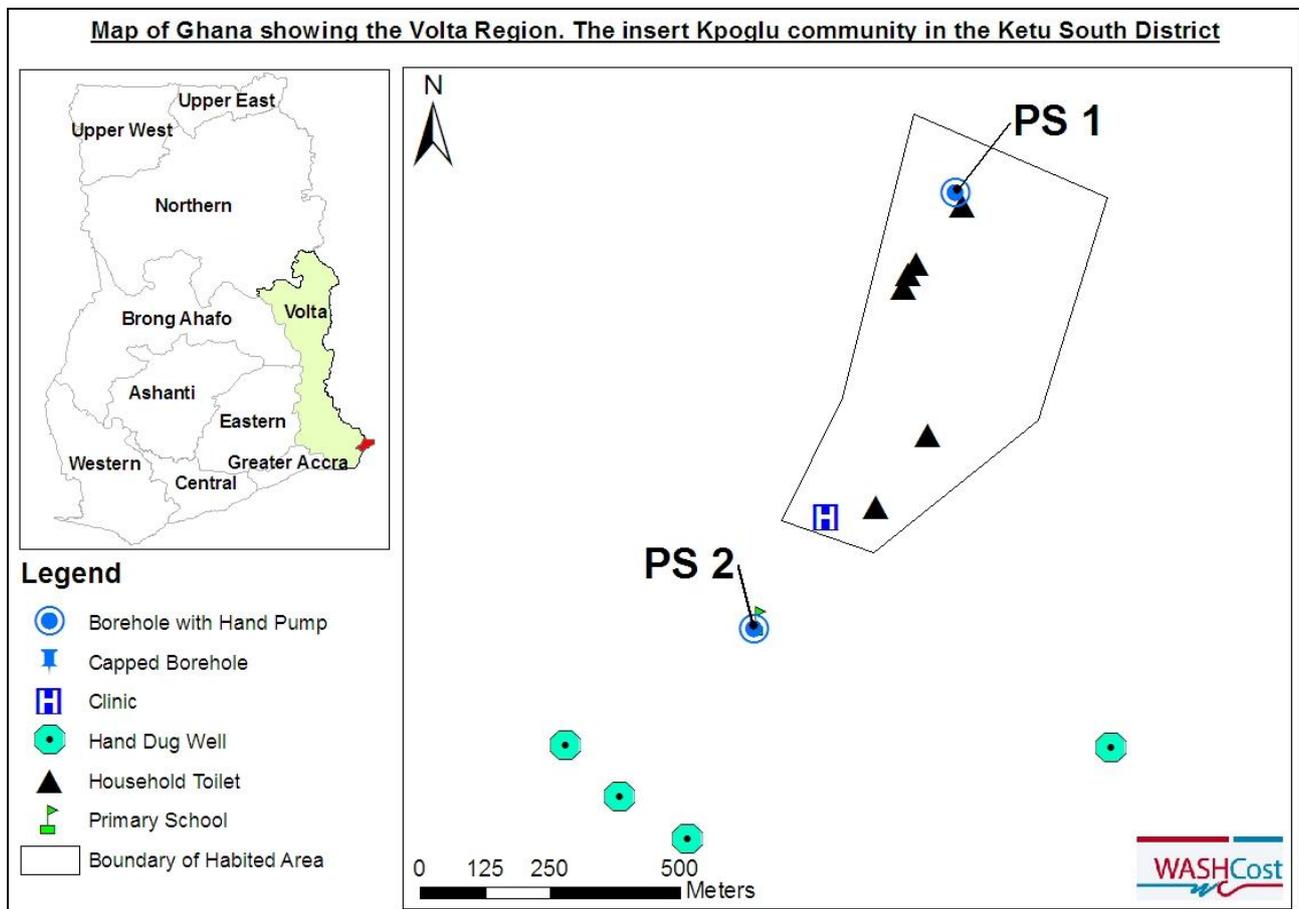


Figure 1: Map of Kpoglu with water facilities

Before 1974, the inhabitants of Kpoglu community relied on four (4) hand-dug wells as their main source of water for all purposes including drinking. These hand-dug wells are still in use and they are owned by some individuals in the community. The subsequent history of the development of Kpoglu water supply is summarised in Table 1 below.

Currently, Kpoglu community has a total of five formal water systems; four boreholes with handpumps and one limited mechanised system. At the time of the visit, only two of the five water systems (a borehole with handpump and a limited mechanised system) were working. Three boreholes with handpumps had been abandoned for more than a decade.

Table 1: The history of the construction and replacement of formal water supplies

Pre-1974	1970's	2001	2008
Four hand-dug wells for domestic and productive uses	Three boreholes with handpumps provided by the government of Ghana with the help of Danish International Development Assistance (DANIDA). No community contribution to capital cost.	One borehole with handpump provided by a non-governmental organisation (NGO) called Lifetime Well Drilling. The community made no capital cost contribution to the provision of the facility. Later, the facility's Indian Mark II handpump was replaced with an Afridev handpump. In 2008, the facility was upgraded to a limited mechanised system.	One borehole with handpump provided by Lifetime Well Drilling. The community made no capital cost contribution to the provision of the facility.

Water consumption from formal and informal sources

Average water consumption for both formal and informal sources did not show any seasonal variation; consumption per person per day was the same for formal and informal sources in both wet and dry seasons. Much of the informal use of water in the wet season, particularly for productive purposes, was not captured in this data as people found it difficult to estimate how much they use e.g. rainwater harvesting in the wet season.

The result of water consumption from formal and informal sources in all seasons is shown in Figure 2 below.

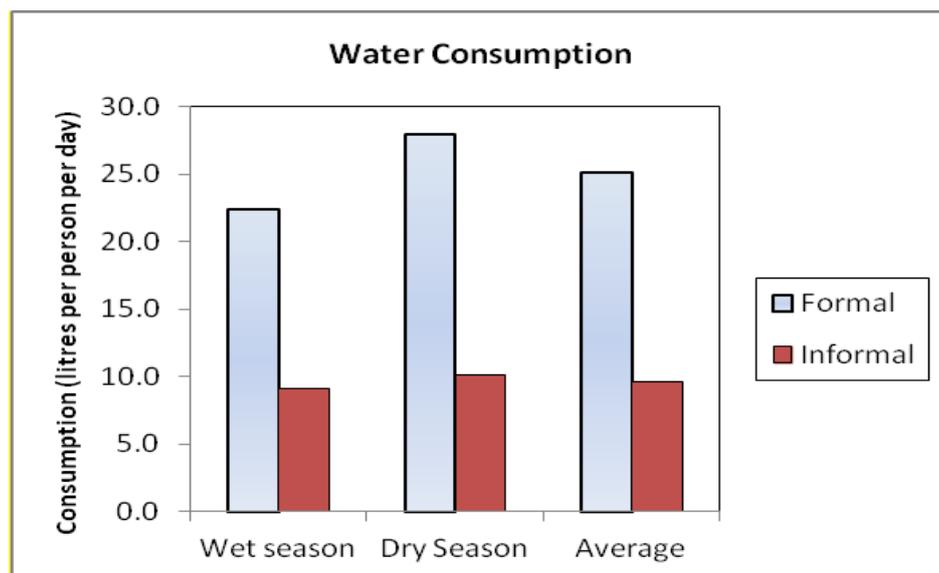


Figure 2: Average water consumption per season

Water service levels in Kpoglu

What matters to people is how much water they get, how far they have to travel to get it, the quality of the water and how often the service is available. These indicators of service levels can be expressed as high, intermediate, basic, sub-standard and 'no service'. A basic service is one that meets the guidelines set by the Community Water and Sanitation Agency (CWSA). According to CWSA guidelines, a basic level of service entails receiving at least 20 litres of water a day and having a water point within 500 metres, which is shared with not more than 300 people. The service level is the service actually received by users, not what is supposed to be delivered to users.

Table 2: WASHCost Ghana service levels according to national norms.

Service Levels	Indicators		
	Quantity (Litres per person/day)	Distance to water source	Crowding with reliability*
High	More than 60	500 meters or less	300 people or less per reliable water point system
Intermediate	40 to 60		
Basic	20 to 40		
Sub-standard	5 to 20	More than 500 meters	more than 300 people per reliable water point system
No service	0 to 5		

* Reliability means water point working at least 95% of the time

The result of the survey for water quantity revealed that,

- A majority of the people (65%) actually use sufficient water according to national guidelines.
- The two reliable water point systems are shared by the 334 people, which is more than the standard maximum of 300 people per water point.

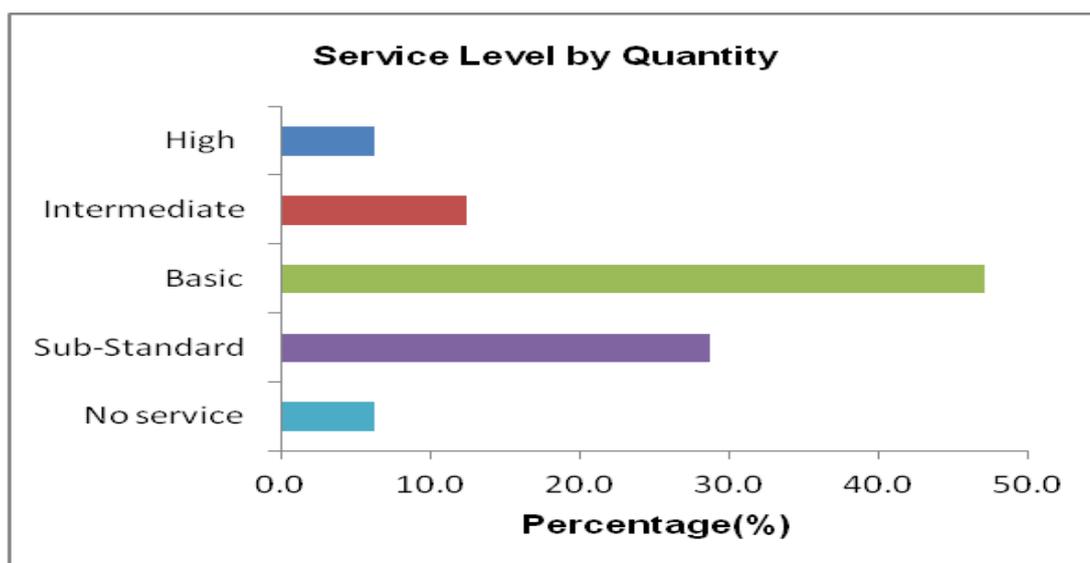


Figure 1: Water quantity service level

This means that a majority of the respondents are receiving at least the basic level of 20 litres of water per person per day as stipulated in the CWSA guidelines.

Accessibility

Majority of the respondents (86%) met the accessibility criteria as their maximum walking distance to the most accessed formal water facilities falls within the norm of 500 metres prescribed by the CWSA guidelines.

Crowding with Reliability

All the respondents (100%) were receiving standard service in terms of service level by crowding-with-reliability because two facilities have been reliable (working 95% of the time for the entire population) resulting in 167 persons per facility compared to norm (300 persons per reliable facility). Due to this, everyone in Kpoglu community fully meets at least the basic standard for a rural water service in terms of crowding with reliability.

Quality and Use

Water from the formal sources are used for domestic (drinking, cooking, washing, bathing) and productive activities (gari processing). Majority of the respondents that accessed the formal water were not satisfied

with the quality of water from the formal point sources. However, no quality test was carried out to confirm their perception.

The informal water sources are used for both domestic and productive activities as well.

Also, 21.7% of respondents purchased sachet water from vendors for drinking only and this is mostly during the dry season.

Based on the WASHCost Ghana water service level matrix (see Table 2), the overall water service level, putting all indicators together as equally important, gives; 40% of respondents receiving standard service level (basic to high) and 60% receiving substandard (limited) and no services. Clearly, respondents receiving the sub-standard and no services are those accessing water quantities below the basic; otherwise all respondents would have satisfied the standard water service level.

SANITATION

The community does not have a public toilet facility but has a Kumasi Ventilated Improved Pit (KVIP) each for a school and a clinic. About 35% of the respondents have household toilet facilities. Out of these, about 10% have Ventilated Improved Pit (VIP), 6% have Kumasi Ventilated Improved Pit, 12% have Traditional Pit Latrine (TPL), while 7% have household toilets of other technologies like sandplat (latrine with impermeable slab). "18% of the rest of the respondents practice open defecation, 28% practice dig and bury and 19% use neighbours toilet facility."

Therefore, based on the sanitation service level analysis, majority of the respondents, (76%) are receiving sub-standard (limited) and no service, while about 24% of the respondents are receiving at least the basic service level.

Costs and finances

Cost data was collected where available to cover capital investment, operational expenditure and capital maintenance expenditure (that is major repairs and rehabilitation), and were adjusted for inflation to a base year of 2009.

Capital investment costs

Capital investment costs were calculated using a regional average because the actual costs were not available for all water facilities surveyed. The average regional cost of developing a borehole and handpump

is US\$ 9,970. This implies that the total investment that has been made in Kpoglu is US\$ 49,850 assuming that all facilities are boreholes with handpumps. Using the design population of 300 people, this suggests a cost of US\$ 33 per person but US\$ 149 per person for the actual population of 334.

Operational and minor maintenance costs

Operational and minor maintenance expenditure (OpEx) was reported for two functional water systems the period during which each water facility had been repaired at least once. Using the designed population of 300 people gives a cost of US\$ 0.08 per person per year and US\$ 0.14 per person per year for the actual population of 334.

Capital maintenance expenditure

The Indian Mark II handpump of one facility suffered breakdown and it was replaced with Afridev in 2008 by the NGO. Using the designed population of 300 people gives a cost of US\$ 2.86 per person per year and US\$ 2.56 per person per year for the actual population of 334.

Table 3: Cost of providing WASH services

Cost Components	Current Cost (2009) in US\$	
	Observed population	Designed population
Capital investment (US\$/person)	149	33
Operational and minor maintenance expenditures (US\$/person/year)	0.08	0.14
Capital Maintenance Expenditure (US\$/person/year)	2.86	2.56

Tariffs

According to the WATSAN committee, water tariff is set by all members in an open forum discussions at any time deemed appropriate at a communal meeting through the WATSAN committee's facilitation. The water tariff is collected and kept by the WATSAN committee.

Sustainability

Members of the community pay ¹GHp 5 for 36 litres of water from the borehole fitted with handpump and GHp 10 for 36 litres of water from the mechanised borehole as a water point system. If all the users were to pay the water tariff, the expected minimum revenue will be GH¢ 4,402 per year assuming 36 litres of water from any of the formal sources is sold at GHp 5.

This suggests that the community should be able to maintain all the water facilities since tariffs are set to recover all operational and minor maintenance cost. Thus, high patronage and commitment from inhabitants to pay for the water could ensure reliable maintenance of facilities to contribute to sustainability.

CONCLUSION

In spite of a very large investment in the five water systems, which should theoretically be more than adequate for a population of about 1500; the reality is that the three of the water point systems have been abandoned and the current population relies on the two reliable water point systems. The two community owned facilities for a population of 334 by the national norm is adequate to satisfy the crowding criteria if at least two are working. However, when all formal water facilities are working, a majority of the inhabitants (86%) travel 500m or less to access the formal water facilities. As a result, the overall water service level, putting all indicators together as equally important, gives; 40% of respondents receiving standard service level (basic to high) and 60% receiving substandard (limited) and no services.

Based on the sanitation service level analysis, majority of the respondents, (76%) are receiving sub-standard (limited) and no service, while about 24% of the respondents are receiving at least the basic service level.

¹ GHp is the local currency Ghana pesewa