



## Kakoshie Gonja community report

### Cost of water and sanitation services in Kakoshie Gonja in the East Gonja District, Ghana

*Kakoshie Gonja community, with a population of 657 has three formal water point systems, two of which are reliable (working 95% of the expected time within the past 12 months). A majority of the respondents (80%) were receiving a good service in terms of quantity of water accessed. The community has no public or institutional latrine and none of the respondents in the community has a household toilet. Due to that, everyone in the community practises either open defecation or dig and bury.*

## 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:  
WASHCost Research Assistants: Dwuodwo Yamoah-Antwi, Philip O. Banahene, Samuel Asare Adjebeng, Catherine Oduro Agyarewa, and Emmanuel Oppong-Antwi.

Northern Region Community Water and Sanitation Agency (CWSA-NR) Team:

Mr. Wigbert Dogoli, Regional Director  
Mr. John Aduakye, Zonal Hydrogeologist  
Mr. Gaeten, Extension Service Officer

East Gonja District:

Mr. Charles Bawa Soale, District Water and Sanitation Team Leader and Planning Officer  
Mr. Amadu Ibrahim, Hand Pump Area Mechanic  
Kakoshie Gonja WATSAN committee and community members

KNUST Drivers:

Mr. Samuel Ansere and Mr. Edward Addai

### **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**

Victor Narteh Otum/IRC 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 present findings of research carried out in the community of Kakoshie Gonja in the East Gonja District in the Northern Region of Ghana.

The WASHCost team visited the Kakoshie Gonja community in October 2009 to collect data on the WASH services received by the inhabitants and the cost of providing these services. The community has a population of 657 people, from the Regional Community Water and Sanitation Agency records for 2009, and 85 households according to the WATSAN committee. The inhabitants are mostly of the Gonja tribe. Their main economic activities are farming and fishing.

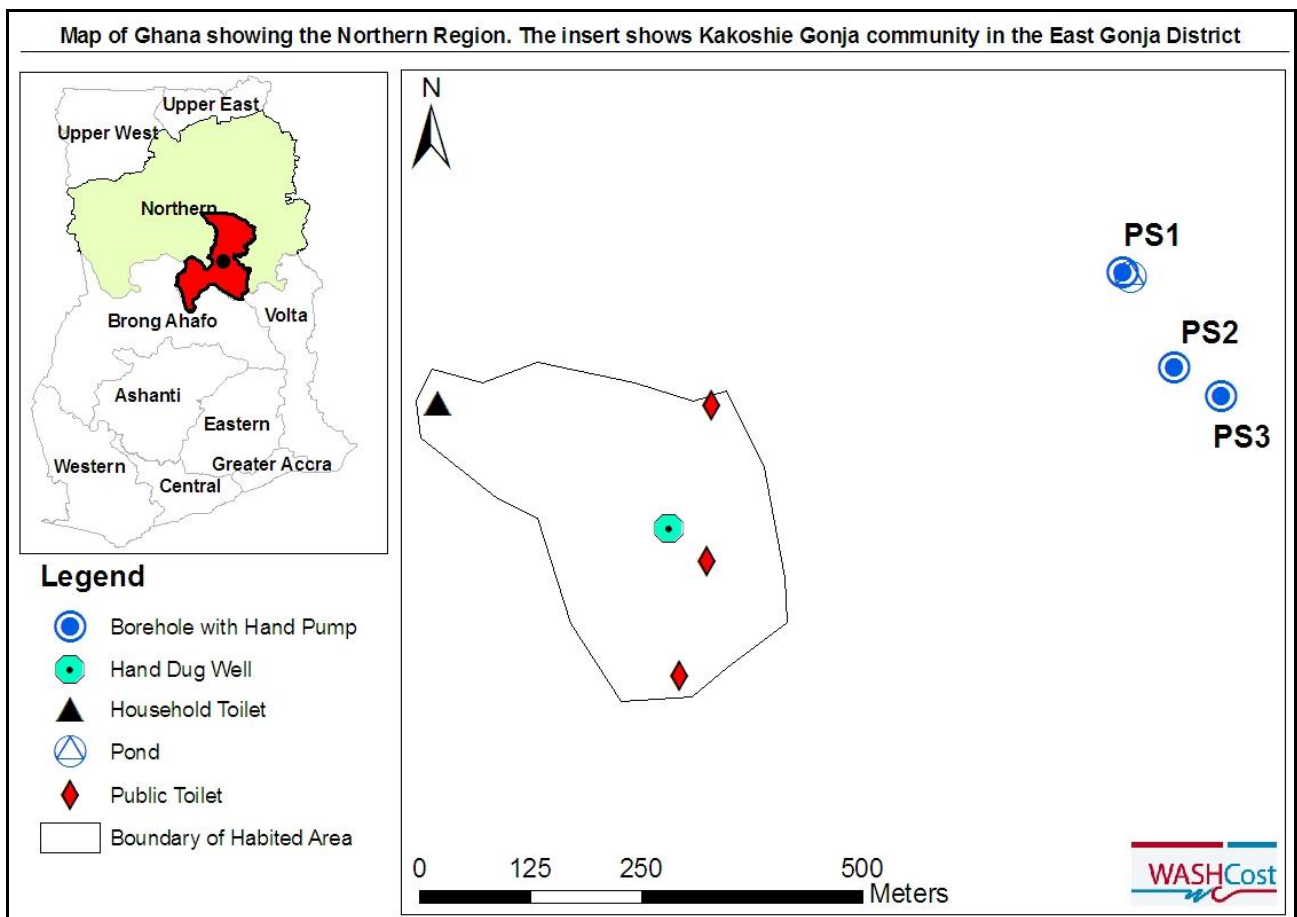


Figure 1: Map of community with water and sanitation facilities

## Water supply

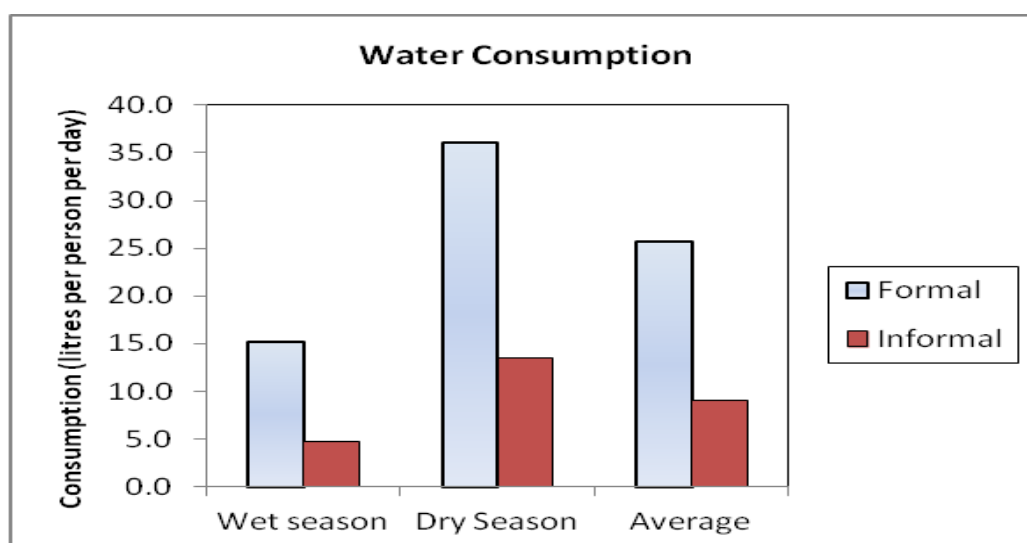
Before the construction of the three formal water point sources, the inhabitants of Kakoshie Gonja relied primarily on two reservoirs provided by the Ministry of Food and Agriculture (MoFA) as their main source of water for domestic activities (e.g. cooking, washing, bathing etc. except drinking), and productive activities (e.g. irrigation, livestock watering, etc). These informal sources are still in use.

At the time of the visit, there were three formal water point systems available in the community and they were all working. The subsequent history of the development of Kakoshie Gonja water supply is summarised in Table 1 below.

Pre-2002	2002	2006
Two reservoirs provided by the Ministry of Food and Agriculture (MoFA) as their main source of water for domestic activities.	Community Water and Sanitation Agency (CWSA) provided the community with a hand-dug well fitted with a hand pump KaHDWHP). Amount of GH¢ 35 was contributed by community to capital cost.	The European Union (EU-Project) provided an additional two boreholes fitted with hand pumps (PS1 and PS2) to further augment their water supply service. Amount of GH¢ 500 was contributed by community to capital cost.

## Water consumption from formal and informal sources

Average water consumption from the formal water source shows a strong seasonal pattern, rising in the dry season ( $\approx 36$  l/c/d) and falling in the wet season ( $\approx 15$  l/c/d) when other sources are readily available. However, some of the informal water (harvested rain water) use 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.



**Figure 2: Average water consumption per person**

### Water service levels in Kakoshie Gonja

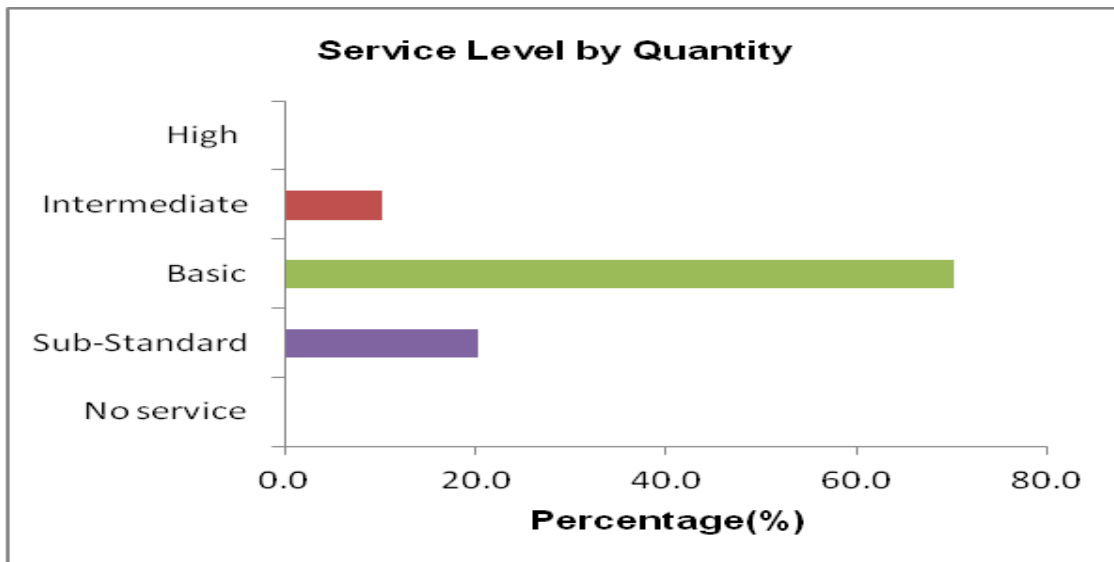
What matters to people is how much water they get, how far they have to travel to get it, the quality of the water and how often the service is available. These indicators of service levels can be expressed as high, intermediate, basic, sub-standard or 'no service'. A basic service is one that meets 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 is the WASHCost service levels based on these norms.

**Table 2: WASHCost Ghana service levels based on national norms**

Service Levels	Indicators		
	Litres per person per 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		

### Service level by quantity

The result of the survey revealed that the majority of the people (80%) of Kakoshie Gonja uses sufficient water quantity per the requirements of the national guidelines.



**Figure 3: Percentage of respondents receiving a particular service**

The result also indicates that only about 20% of the respondents are not receiving acceptable service by quantity (sub-standard). This means a majority of the respondents are receiving the basic level of at least 20 litres of water per person per day as stipulated in the CWSA guidelines.

### Accessibility

All the respondents do not meet the accessibility criteria. This is because their maximum walking distance to the formal water facility exceeds the norm of 500 metres required by the CWSA guidelines.

### Crowding with reliability

The community has three water points systems available in the community, two of which have been reliable (that is working 95% of the expected time within the past 12 months). The three available water point systems are shared by 657 people, which is less than the prescribed standard of at most 300 people per water point.

Due to this and following strictly the norm everyone in Kakoshie Gonja does not fully meet at least the basic standard for rural water service in terms of crowding with reliability.

## Quality and Use

All the respondents perceived the quality of water accessed from the water point systems to be satisfactory in both the dry and wet seasons. However, no water quality test was carried out to confirm their perception. Water from the formal source is used for all domestic purposes including drinking and also for productive uses such as livestock watering and irrigation.

Based on the WASHCost Ghana service level matrix (see Table 2), the overall water service level, putting all indicators together as equally important, gives: all the respondents (100%) receiving sub-standard (limited) service. Clearly, respondents are receiving the sub-standard service because the whole population of 657 do not meet the accessibility criteria (not more than 500 meters of fetching distance) and also strictly the over 600 users per two reliable water points does not fully meet the basic standard for crowding.

## SANITATION

The Kakoshie Gonja community has no toilet facilities whether public, institutional or household types. CWSA in collaboration with the EU and AFD provided some subsidies in the form of construction materials to enable members to construct household toilets. Yet this call was not heeded to. None of the respondents had a household toilet facility. Currently, almost all the community members either defecate openly or practise the dig-and-bury option.

## COSTS AND FINANCES

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

### Capital investment costs

Capital investment costs calculated using a regional average as actual costs were not available for all boreholes surveyed. The average regional cost of developing a borehole fitted with handpump is US\$ 7,795.

### Operation and maintenance costs

The water point systems have suffered some minor faults which have led to the replacement of some parts such as U-seals, O-rings, and rod centralisers. These repairs were carried out between 2008 and 2009. The OpEx per capita is US\$ 0.06 and US\$ 0.13 annually based on the actual and design populations respectively (see Table 3).

### Capital maintenance

Capital maintenance expenditure had never been incurred. The reason is that, there had never been any major rehabilitation and/or replacement of handpump. This means that capital maintenance expenditure is US\$ 0 (see Table 3).

**Table 3: Cost of providing WASH services**

Cost Components	Cost in US\$ (2009)	
	Actual population	Design population
Capital investment (US\$/person)	36	26
Operational and minor maintenance expenditures (US\$/person/year)	0.06	0.13
Capital Maintenance Expenditure (US\$/person/year)	0	0

### Tariffs

Every married woman is charged GHp 50 per month for accessing the formal water systems. At the time of the visit, the WATSAN committee had a cash balance of GH¢10 in its coffers as well as some handpump spare parts.

### Sustainability

The WATSAN committee has only GH¢ 10 as mobilised funds towards any potential recurrent expenditure. This amount, looking at the expenditure on operations and maintenance so far may seem adequate but it is woefully inadequate for effective operational and minor maintenance expenditure and capital maintenance expenditure when reality sets in. Since the magnitude of OpEx is far less than expected probably because virtually no purchases of spare parts are made yet (using those handed over by the project that provided the facilities) and also low levels of



repairs as facilities are in early years. The water services and infrastructure are more unsustainable even the near future as facilities aged demanding higher levels of operational and minor maintenance and capital maintenance expenditure and when spare parts in-stock also get finished since users clearly lack the ability to mobilise enough funds.

## Conclusion

Kakoshie Gonja community with a population of 657 is considered to have more than 100% water coverage based on the CWSA norm of facility provision, where two boreholes fitted with handpumps should serve 600 people and a hand-dug well fitted with borehole should serve 150 people. The reality is that despite the capital investment that had been made in three formal water facilities which should be adequate for 750 people; the current population of 657 relies on the two reliable formal water facilities.

A majority of the respondents (80%) were receiving a good service in terms of quantity of water accessed. It was also clear that about 20% of the people were using a quantity of water below the national norm of 20 litres per person per day. Everyone in the community has access to the water facility within 500 metres. The overall water service in terms of quantity accessed, accessibility by distance and crowding-with-reliability gives all the respondents (100%) receiving sub-standard.

The fund in the WATSANS coffers suggests that the community may not be able to cover all the recurrent expenditure – operational and minor maintenance expenditure and capital maintenance expenditure. Communities should therefore be encouraged to pay feasible tariffs to help achieve an amount which can take care of all operation and maintenance of the facility and also for replacement of handpumps.

The sanitation service level in Kakoshie Gonja based on the WASHCost sanitation service ladder revealed that all inhabitants are not receiving an acceptable sanitation service.