Pease community report

Cost of water and sanitation services in Pease, Bosomtwe District of Ashanti Region Ghana

- *A community with three functional formal water systems which provide water to the populace within 500 metres, one source is however, perceived to be poor because of its 'bad' taste and odour so not very much patronised. Less than half of the community has access to improved sanitation.*

January 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: Eugene Appiah-Effah, Bernice Donkor-Badu, 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 O. Antwi

Bosomtwe District:
Mr. Mark Tachie, District Water and Sanitation Team Leader and Planning Officer
Mr Kune, Handpump Area Mechanic
Pease 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

Peter McIntyre/WASHCost

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

The WASHCost team visited the Pease community in February 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 2611 people according to the regional Community Water and Sanitation Agency (CWSA) 2009 report. The inhabitants are mostly of the Ashanti ethnic group and their main occupation is agriculture (food and cash–crop farming, mostly oil palm, and cocoa farming).

Map of Ghana showing the Ashanti Region. The insert shows Pease community in the Bosomtwe District

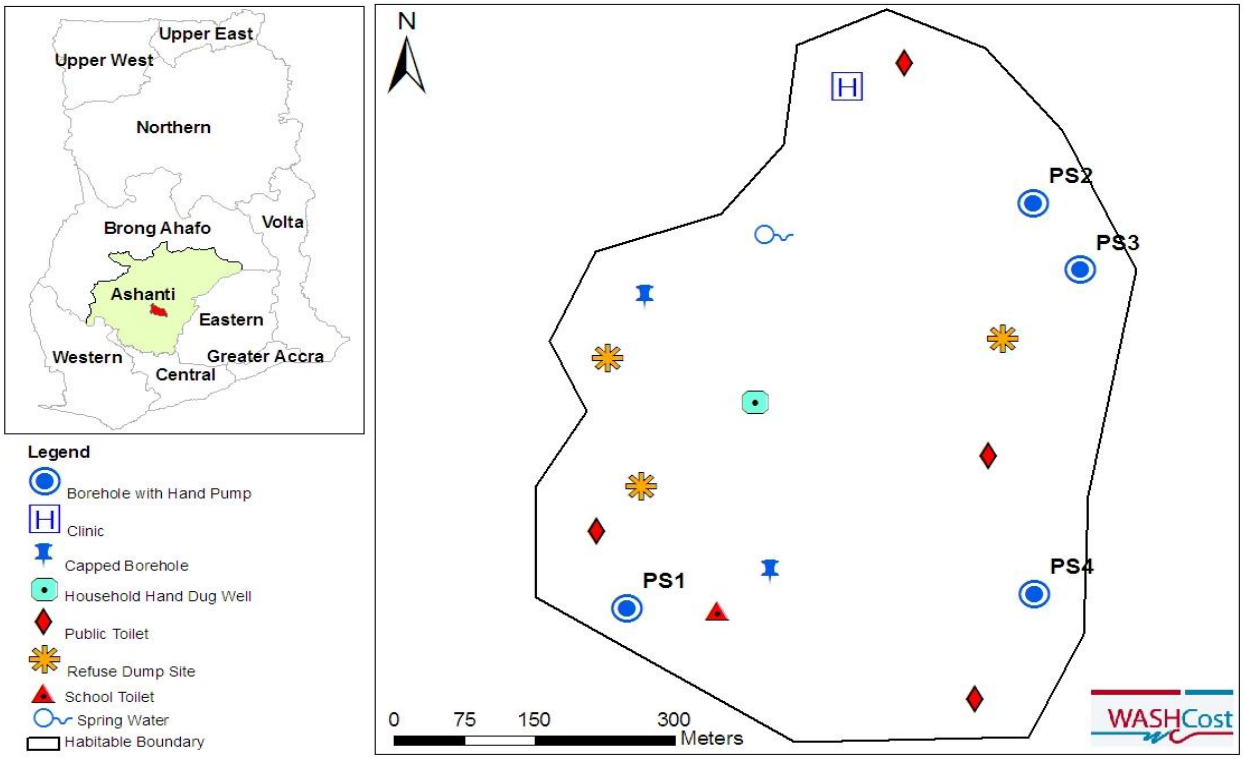

Figure 1: Map of community with water and sanitation facilities

**The boundary lines indicate only inhabited areas of the community and not the political boundaries of the community*

WATER SUPPLY

Before the year 1981, the inhabitants of Pease relied on three (3) streams as their main sources of water. Due to the unreliable nature of the streams especially in the dry season, the community requested for the provision of a formal water source from the District Assembly. The subsequent history of the development of Pease's water supply is summarised in Table 1 below.

Currently there are four (4) formal water point sources available to the community. All the water facilities (PS1, PS3 and PS4) except PS2 were functional during the time of visit although all the four had previously suffered some break downs.

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

Pre-[1981]	[1981]
Three (3) Streams namely Banko, Amoasua and Bosompoma for domestic, non domestic and productive uses.	Four (4) boreholes with handpumps (PS1, PS2, PS3 and PS4) provided by World Vision and [1]GoG through the District Assembly. No community contribution to capital cost.

Water consumption from formal and informal sources

Average water consumption showed minimal seasonal pattern with the formal water source. Consumption per person per day was the same for informal sources in both wet and dry seasons. Much of the informal use of water in the wet season, particularly for productive use, is not captured in this data which explains why in the wet season informal water use seems the same as dry season. People found it difficult to estimate their use of e.g. rainwater harvesting in the wet season.

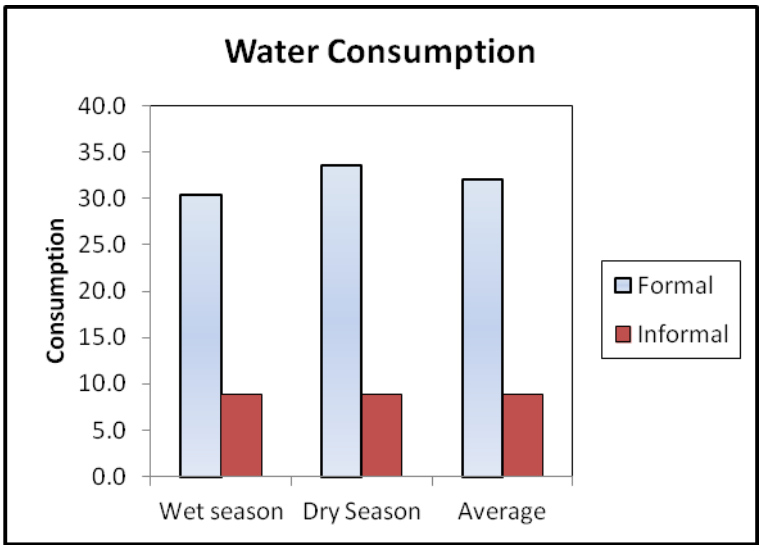

Figure 2: Average water consumption per season

[1] GoG is Government of Ghana

Water service levels in Pease

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 can be expressed as service levels – high, intermediate, basic, sub-standard and 'no service'. A basic service meets the guidelines set by the Community Water and Sanitation Agency (CWSA). The service level is the service actually received by users, not what is supposed to be delivered to users.

Table 1: WASHCost Ghana service levels according to 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 or less people per reliable point source
Intermediate	40 to 60		
Basic	20 to 40		
Sub-standard	5 to 20	More than 500 meters	more than 300 people per reliable point source
No service	0 to 5		

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

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 no more than 300 people.

In Pease,

- *58% of people actually use sufficient water according to national guidelines.*
- *Of the three working boreholes, only two are considered reliable (working 95% of the expected time)*
- *The two reliable water points are shared by 2611 people (i.e. 1306 per water point), which is four times more than the standard of maximum 300 people per water point.*
- *All households interviewed have access to a water source within 500 metres.*

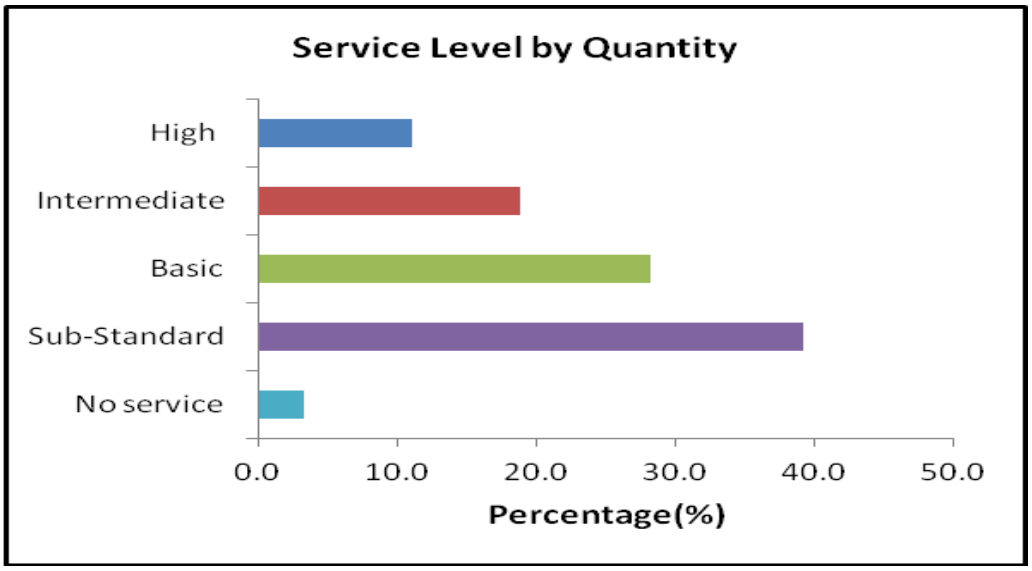

Figure 3: Water service level by quantity

A majority of the respondents, about 58% are enjoying an acceptable service level (basic service level or better). This means that a majority of the people are receiving the basic level of at least 20 litres of water per person per day as stipulated in CWSA guidelines. However, about 42% of the respondents receive a sub-standard and no services throughout the year.

Quality and Use

All the respondents (100%) perceived the quality of the formal water source (PS1 and PS4) to be good. Also 94% of the respondents perceived the quality of PS3 to be poor because of its 'bad' taste and odour. However, no water quality test was carried out to confirm their perception.

Water from the formal sources is used for domestic activities (drinking, cooking, washing, bathing) and productive (brewing of palm wine and palm oil production) activities. Although the informal water sources are not acceptable by CWSA norm for domestic use, it is used for the same purposes as water from formal source. The informal sources include streams and rainwater harvested by households. Also 3% of respondents purchase sachet water from vendors for drinking purposes only.

Reliability and crowding

The community had been relying on three formal water point sources since one of the boreholes had broken down. Two out of the three boreholes are considered reliable (working 95% of the expected time). Due to crowding, no-one in Pease can currently be said to fully meet the basic standard for a rural water service.

Accessibility

All of the respondents are receiving acceptable service in terms of access. This is because their maximum walking distance to the formal water facilities falls below the norm of 500 m.

SANITATION

There are five public toilets in Pease which are used by some of the inhabitants without household toilets. Only 32% of the respondents have access to improved sanitation.

Costs and finances

Cost figures were collected, where these were 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 calculated using a regional average as actual costs were not available for all boreholes surveyed. The average regional cost of developing a borehole and handpump is US$ 7,121. This implies that a total investment has been made in Pease of US$ 28,484. Using the design population of 300 people, this suggests a cost of US$ 24 per person or US$ 11 per person for the actual population of 2,611 people.

Operation and minor maintenance costs for the four boreholes with handpumps were reported to be US$ 0.07 per person per year for the actual population. The operational and minor maintenance expenditure (OpEx) in terms of cost per capita based on design population is US$ 0.58

Capital maintenance has never occurred. The reason is that there has never been any major rehabilitation and/or replacement of handpump. This means that capital maintenance expenditure is US$ 0.

Table 2: **Cost of providing WASH services**

Cost Components	Current Cost (2009) in US$	
	Actual population	**Designed population**
Capital investment (US$/person)	11	24
Operational and minor maintenance expenditures (US$/person/year)	0.07	0.58
Capital Maintenance Expenditure (US$/person/year)	0	0

Tariffs

According to the WATSAN committee, the water tariff is set by all members in an open forum at any time deemed appropriate. The water tariff is collected and kept by the WATSAN committee. A tariff of [2]GHp 5 (approximately US$ 0.04) is charged for 36 litres of water fetched on pay-as-you fetch basis. About 17% of respondents considered the water tariffs as high, 56% of the respondents said it was acceptable and the rest considered the tariffs as low. A focus group discussion with the WATSAN committee revealed that there are generally occasional breakdowns of the formal water point source. Repair works are carried out with the money coming from the accrued tariffs and this affect the amount of money in their WATSAN account at any point in time.

If all the users were to pay the tariff of GHp 5 (US$ 0.04) per 36 litres of water, the expected revenue would be GH¢42,356.22 (US$ 30,254) per year, which would probably be largely sufficient to pay for operational expenditure and to also replace hand pumps every 25 years and other routine parts repairs. This suggests that the community should be able to maintain all the water facilities.

Sustainability

The WATSAN committee were not able to show the total balance of revenue available in their account as at May, 2010 when the team visited the community. However, they disclosed that the revenue accrued through the sale of their water was used for the operation and maintenance of the boreholes with handpump. It was reported that the water point sources are quickly repaired when

[2] GHp is Ghana pesewa

they break down and this was due to the availability of funds for operation and maintenance activities. Thus all operation and maintenance could be funded from the expected revenue.

Conclusion

Although maximum walking distance to the formal water facilities falls below the norm of 500 metres and more than half of the respondents (58%) receive at least 20 litres of water a day, no one in the community can currently be said to enjoy acceptable service levels which satisfy the CWSA criteria. Despite the capital investment in four boreholes with handpumps which should theoretically be adequate for a population of 1200 – this is however not the case as only two of the water points were reliable during the study. This means that the entire community is under served due to crowding.

Reported use from the formal water point source showed minimal seasonal variability. It was also clear that 42% of the population of Pease were using quantities below the national norm of 20 lcd, with 58% reporting basic or better daily use.

Only 32% of the population of Pease is covered in terms of sanitation while 68% of the inhabitants have no access to improved sanitation service due to the unimproved sanitation facilities being used. However, the coverage is higher than the national coverage of 13%.

The data that could be collected on operation and maintenance for the water points showed the community practiced break down maintenance but not preventive. This means they only repair any of the parts when there are break downs. Communities should therefore be encouraged to have a systematic approach to maintenance where some parts of the water point source are changed periodically to ensure sustainability.

The pay-as-you fetch tariff system and the willingness of the water users to pay the tariff has enabled the WATSAN to accrue enough money to repair their water facilities which if continued will make the system sustainable.