

# Life-cycle costs approach for WASH services that last



## Life-cycle costs in Ghana

Briefing Note 8: Uses and sources of water  
in rural areas

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**WASHCost project partners have developed a methodology for costing sustainable water, sanitation and hygiene (WASH) services by assessing life-cycle costs and comparing them against levels of service provided. The approach has been tested in Ghana, Burkina Faso, Mozambique and Andhra Pradesh (India). The aim of the life-cycle costs approach is to catalyse learning to improve the quality, targeting and cost effectiveness of service delivery.**

In Ghana, Kwame Nkrumah University of Science and Technology (KNUST), IRC International Water and Sanitation Centre, and Community Water and Sanitation Agency (CWSA) are using the WASHCost Life-Cycle Costs Approach (LCCA) to identify the true costs of providing sustainable WASH services in rural and peri-urban areas. These series of briefing notes have been developed to explain the methodology, share the findings, and draw out the implications for policy and practice in Ghana's WASH sector.

This briefing note No. 8 presents the findings on *uses and sources of water in rural areas* and draws out the implications for policy and practice in Ghana's WASH sector.

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## Front page photo

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WASHCost is a five year action research project investigating the cost of providing water, sanitation and hygiene services to rural and peri-urban communities in Ghana, Burkina-Faso, Mozambique and India (Andhra Pradesh). The objectives of collecting and disaggregating the cost data over the full life-cycle of WASH services are able to analyse cost per infrastructure and service level, and to better understand the cost drivers and through this understanding to enable more cost effective and equitable service delivery. WASHCost is focused on exploring and sharing an understanding of the true cost of sustainable services (see [www.washcost.info](http://www.washcost.info)).

# Life cycle costs in Ghana:

## Uses and sources of water in rural areas

This briefing note, No. 8 in the series, focuses on findings from WASHCost research relating to the pattern of use of water by rural people in Ghana. It is part of a series of notes drawing on research work carried out by the WASHCost project in 2010 and 2011.

It finds evidence that rural water users are taking water from a range of sources, formal and informal, to meet their various water needs. It suggests that in light of this finding, those involved in rural water provision should:

- Do more to raise awareness of the health risks of using water from informal sources (and possibly promote household water treatment)
- Adopt a more integrated approach to providing rural water services that take as their starting point the need to satisfy the full range of water use in peoples livelihoods: adopting a multiple use service approach
- Provide more opportunity for rural communities to express their demand for water services tailored to their needs

### Introduction

Rural water services in Ghana, particularly those provided by the Community Water and Sanitation Agency (CWSA), are typically seen as responding primarily to the need for good quality drinking water. It is with this in mind that the basic service level of 20l/c/d of good quality water, located not more than 500m from a person's home and available 95% of the time has been formulated.

However, experience from Ghana and many other countries around the world shows that rural peoples' need for water is more complex than this. Typically, water plays a wide variety of roles in the livelihoods of rural households, of which domestic use (drinking, washing, cleaning and preparing food) is just one. Depending on where they live, and what sort of livelihoods they are involved in, people may also use water for their livestock, for watering vegetables around their house, for preparing food for sale, or other small businesses. There is increasing recognition that rural water services should be designed with some of these additional needs in mind, with the aim of maximising the benefit that rural people gain from access to a reliable water service. This approach to rural water service delivery is sometimes referred to as a Multiple Use Service (MUS) approach.

While the WASHCost research work in Ghana focussed primarily on the costs and service levels provided by formal domestic water supplies, it also asked questions about users' access to other (informal) supplies, as well as about non-domestic use of both formal and informal supplies. This briefing note reports on the findings from these investigations.

### Data collection

The analysis presented in this note draws on the same set of household surveys used for other notes in the series. This data was collected during extensive field work that visited over 1,000 water users in three districts (Bosomtwe, East Gonja and Ketu South) in three representative regions of Ghana (Ashanti, Northern and Volta). 31 rural communities were visited as well as 5 small towns (Kuntenanse in Bosomtwe; Bankamba and Kpandai in East Gonja; and Akame and Kpogedi in Ketu South). It is important to note that, because of the focus of the research on the costs of providing formal services, all communities visited had at least one formal source of water.

### Findings

Three sets of findings are of interest, and are presented briefly. The first relates to the mix of different types of water sources accessed by users in the three districts, the second to the numbers of people using the formal water sources for non-domestic (productive) uses and the third to the quantities of water being used for productive activities.

#### Multiple sources – where people are getting their water from

Figure 1 shows the percentage of rural households in each district who reported getting at least some of their water from an ‘informal’ source, that is, a source other than an officially sanctioned borehole with handpump.

Figure 1 Use of informal sources

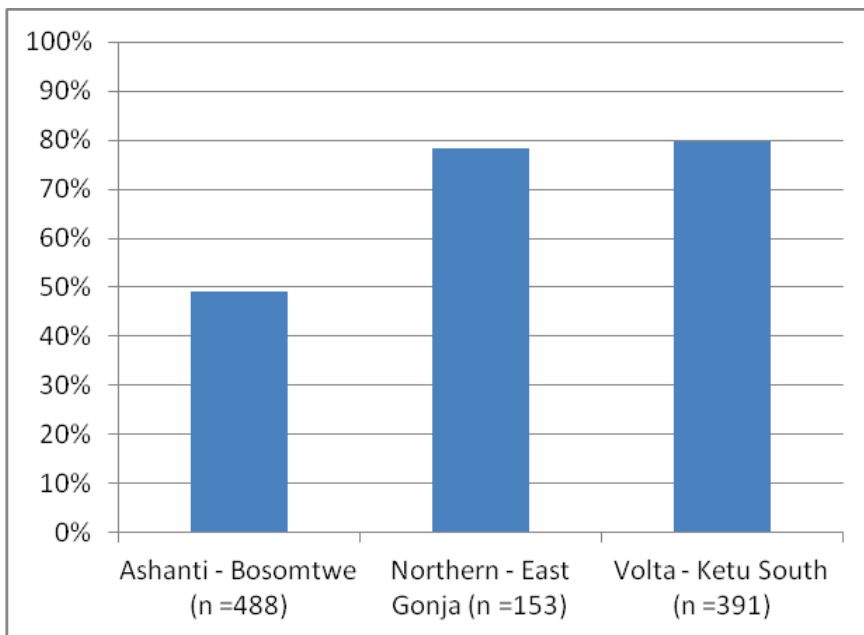
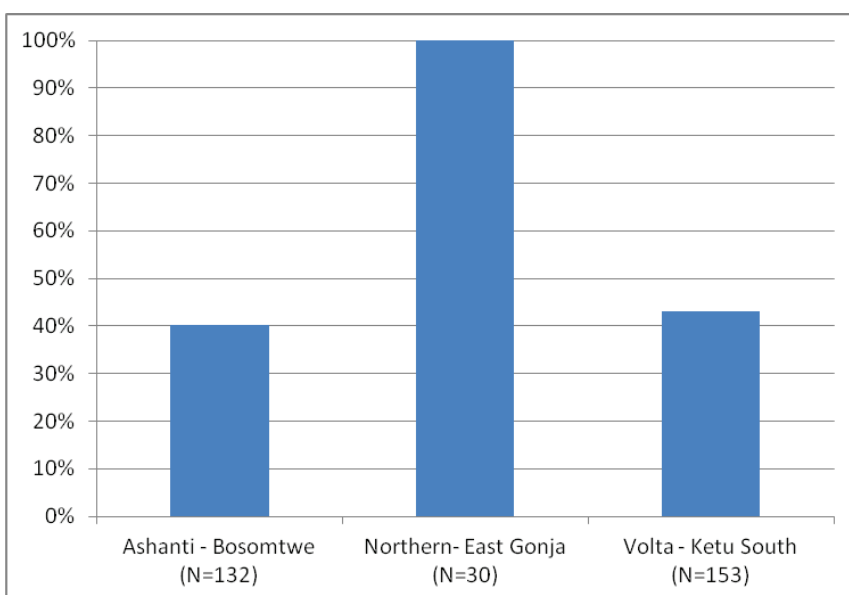


Figure 2 shows the percentages of respondents in small-towns who reported using an informal source in addition to the piped water supply. The 100% figure for East Gonja is probably due to persistent problems with the piped water supplies to Bankamba and Kpandai.

Figure 2 Use of informal sources in small towns



The type of informal sources of water used varied between the districts, with the majority of those in East Gonja reporting that they used either dams (37%) or streams (27%) with only 17% using dugouts. In Ketu South almost all respondents used dugouts, whilst in Bosomtwe the majority (38%) used streams with the remainder using the lake and dugouts.

In all three districts, users reported that at least some of the water from informal sources was used for domestic purposes – augmenting or replacing the formal water point(s). The percentage of people using informal sources for domestic use ranged from a low of 53% in East Gonja through 77% in Ketu South to 87% in Bosomtwe - where the lake is an easy resource for a range of activities.

It is striking that residents of Bosomtwe lived, on average, closer to the formal water points (median distance 123m) than did those in Ketu South (174m) or East Gonja (317m) and also that the formal water points in Bosomtwe reported the highest levels of functionality (85%) compared to the other districts (both 63%) – see **briefing notes No. 4 and No. 6** for more detail.

Data was not collected on the quantity of water taken from informal sources, largely due to the difficulty of measuring this given that much use (e.g livestock watering) takes place at the source itself. What is clear, is that in all districts informal sources continue to play an important role in meeting people’s total water demand.

#### Productive use of formal water sources

Figure 3 shows the percentage of rural water point-system users who reported using at least some water from their formal water supply for productive (i.e. non-domestic) uses. Some productive use took place in all three districts, however, it is most pronounced in Ketu South and East Gonja, where almost 50% of users reported that at least some of their formal water supply was used for productive purposes. In all three districts the most commonly reported use of water was for cooking (preparation of variety of food or dishes for sale to the public).

Figure 3 Use of formal rural water sources for productive purposes

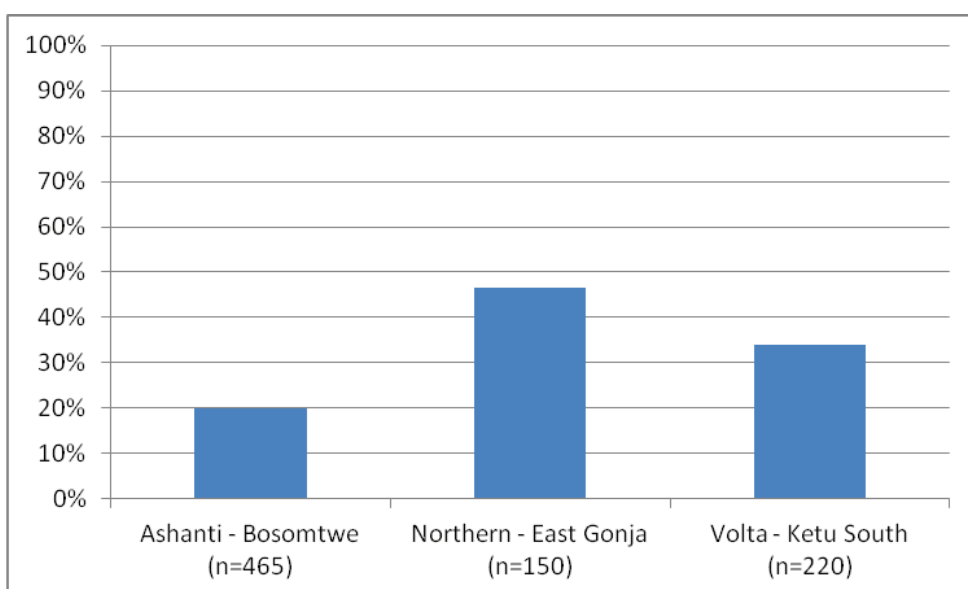
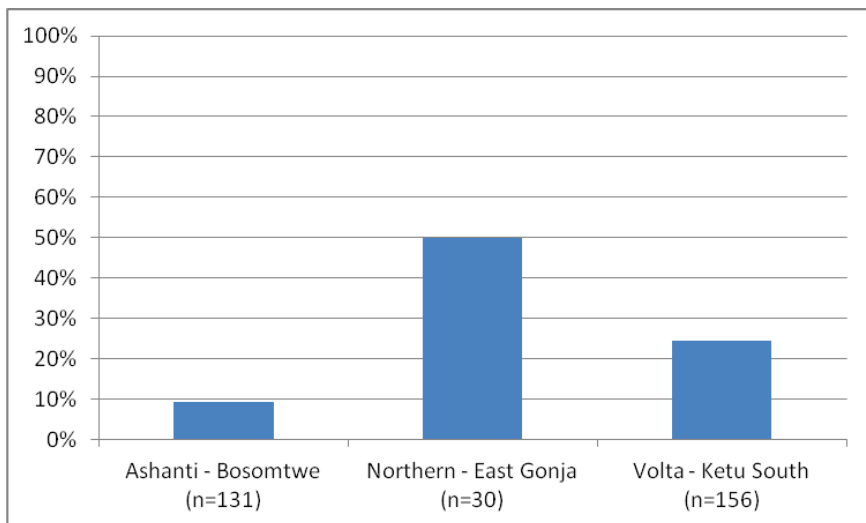


Figure 4 shows a similar graph, this time for respondents relying on small-town piped water schemes. In this case, use for productive purposes is at a similar level in the small-towns in East Gonja as in the rural communities. However, it is considerably less for the small towns in Ketu South and Bosomtwe. This may reflect the more rural nature of the communities in East Gonja, which are essentially rural communities relying on a multi-village scheme as compared to Bosomtwe and Ketu South which are both proper small-town systems.

Figure 4 Productive use of formal water supply in small towns



**Quantities of water from formal sources being used for productive activities**

Figure 5 shows the average quantities of water reportedly used for productive activities (in litres per person per day) for Ketu South and Bosomtwe districts (data on the quantity of water for productive use was not collected in East Gonja). For comparison, the figure also shows the average water use in the two districts for all purposes reported.

The reason why the average figure for productive use is higher than that for all uses relates to the sample sizes. Only a relatively small percentage of people were able to provide an informed opinion as to their water use for productive purposes (20 out of 476 for Bosomtwe and 71 out of 389 in Ketu South). However, taking this into account, what the graphs seems to suggest is that while the majority of people may not use the formal water supply for productive purposes, those who do tend to be amongst the heavier users of water overall.

Figure 5 Use of water from formal rural water point-systems for productive purposes

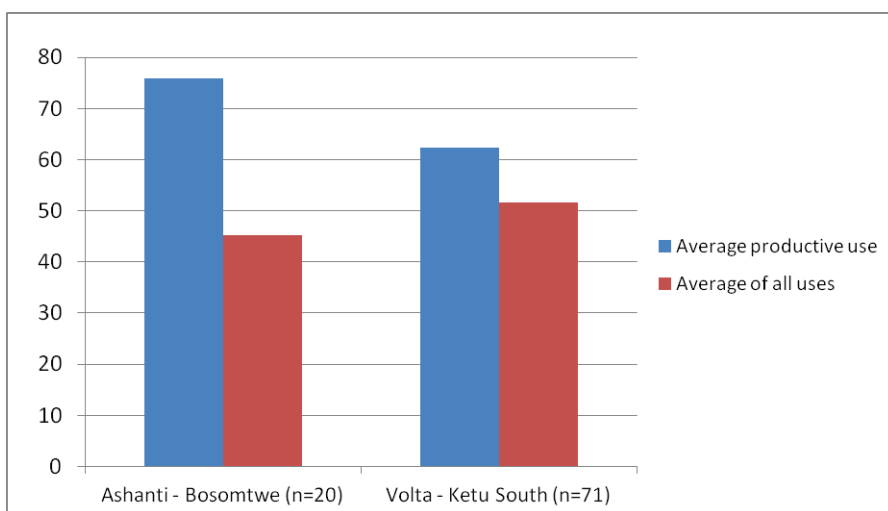
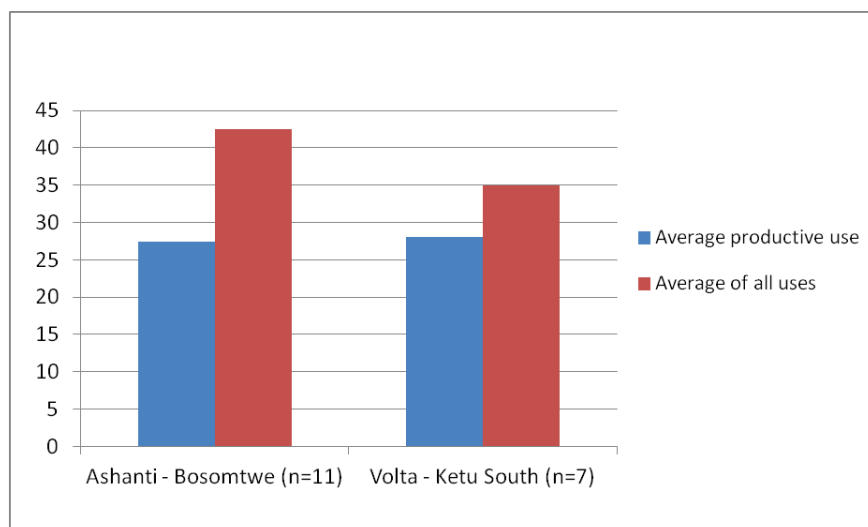


Figure 6 shows similar data but for small town piped systems. Here too water from the formal system is used for domestic purposes. However, contrary to the more rural settings, the per-capita daily use for productive activities is lower than that for domestic activities. Again, the sample size is small so only general tendencies can be observed.

Figure 6 Use of water from small town pipe networks for productive purposes



### Conclusions and emerging questions for policy

One broad, and reasonably robust, main conclusion can be drawn from the findings of this work. This is that rural people in Ghana, in common with their counterparts in much of the rest of the world, use water from a variety of different sources for a range of different uses. What is more, they use water from informal sources for domestic uses and from formal sources for productive uses.

A number of additional conclusions can be drawn, although given the relatively small size of the sample and the fact that this was not the main focus of the work, these findings are tentative and need further work to either validate or confound.

**Regional differences can be observed in the patterns of use of both formal and informal sources.** The largest proportion of people reporting use of informal sources as well as of formal sources for productive use is found in East Gonja district. This seems to support more anecdotal findings based on talking to villagers and others that, in the sparsely populated North of Ghana, formal water systems (especially point systems) are just one part of a broad range of water sources. It seems that for many people, the pattern is to use whatever water source is most convenient, and to revert to the formal source primarily when the other convenient sources have become unavailable (for example, as they dry up during the dry season).

Although in Ketu South and Bosomtwe districts, the majority of people did not report using the formal water systems for productive use; **those who did, used a relatively greater share than the average user.** In both places, daily per-capita use for productive uses was greater than 60l/c/d – which is three times what the system is designed to provide.

Even small town water users report some productive use of water from their pipe networks, although the amount used is less than in communities using water point-systems.

### Recommendations for policy and practice

The work reported in this briefing note is indicative. The only points that are strongly confirmed are that rural Ghanaians use water from a variety of sources – and use it for a multitude of different purposes. However, even these limited findings have implications for policy, although requiring considerably more study to confirm (or refute) the initial indications given here.

#### Users are mixing safe and unsafe water sources: more work needed on hygiene behaviour

The main implication is that, particularly in the North of the country, **the rationale for, and approach to, supplying formal domestic water through water point-systems needs to be re-examined.** This is because it seems likely that, in the absence of strong public health and hygiene awareness, many rural users are mixing safe and potentially (or actually) unsafe sources of water for domestic use. The implication, if confirmed, is

that assumed public-health gains from investing in rural water supply are unlikely to be achieved. This would in turn imply that to ensure the health benefits of providing improved water services, further work on changing hygiene behaviour is required, possibly linked to more active promotion of household water treatment.

### **Rural people use water for multiple purposes: a multiple use approach should be adopted**

Another implication is that CWSA, District Assemblies, NGOs and others engaged in providing rural water services, **should take more time to understand the livelihood patterns of rural water users, and explicitly tailor their interventions to support these, using a multiple use approach.** This might imply, for example, providing less (but more reliable) water for drinking from point sources, while developing other sources (such as small dams) for non-drinking productive uses. Adopting this approach would imply CWSA working more closely with other actors involved in providing water for productive uses, as well as those involved in rural development generally, to come up with integrated plans that take as their starting point provision of water to improve broadly based rural livelihoods.

### **Rural people's voices need to be heard in the service delivery planning process**

The complex pattern of water use hinted at in these findings calls for a more truly bottom up and inclusive approach to planning and implementing water supply projects than is currently the case. **Communities should be given a real voice in identifying and prioritising their various water needs, and in choosing water service options that suit those priorities.** This voice should be clearly reflected in the development of district water and sanitation plans.

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