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Potable Water Supply and Its Implication on Household Productivity in The Wa Municipality of Ghana

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Absract
This study was conducted to find out the implications of access to potable water supply on the productivity of households in the Wa Township of the Upper West Region of Ghana. A total of 80 households from four section of the study area were used for the research through focus group discussions and questionnaire survey. Findings from the study shows that access to potable water supply is costly both in terms of money and time spent, which significantly hinder socio economic activities of households in Wa. Households in Wa face diverse challenges when accessing potable water. Among this challenges include irregular flow of water which is very common due to power failure and pipe leakages. More to the point water sources such as wells and boreholes dry up in the dry season and supply is usually less than demand which often result in queuing, fighting and lateness to work. It is recommended that Government, non-governmental organizations as well as philanthropists should work harder towards the expansion of water supply system in the municipality, that is increasing the number of stand pipes and boreholes. Also the Ghana Water Company in conjunction with the Municipal Assembly should provide stand by generators to help pump water in the municipality during periods of power outages.
Keywords: Potable water, Supply, Implication, Household Productivity.

1.0 INTRODUCTION

Although water is seemingly abundant, the real issue is the quantity of fresh water available for use by the world's increasing population. Approximately 97.5% of all water on earth is salt water leaving 2.5% as fresh water. Nearly 70% of that fresh water is frozen in the ice caps of Antarctica and Greenland; most of the remainder is present as soil moisture or lies in deep underground aquifers as ground water not accessible for human use (Conner et al ,1998). Less than 1% of the world's fresh water is accessible for direct human use (Ghana Water Resources Commission, 2011). Potable water is water which is fit for consumption by humans and animals. It is also called drinking water in relation to its intended use. Water may be naturally potable as it is the case with pristine springs or it may need to be treated in other to be safe. In either instance, the safety of water is assessed with tests which look for potentially harmful contaminants. The issue of access to potable water is very important since the world's supply of fresh water is running out (IAEA, 2000). According to BBC News on World water crisis (2005), one out of five (5) people are without access to water. The World Health Organization estimates that 5 million people die annually from diseases caused by unsafe drinking water and lack of sanitation and water for hygiene. No wonder the theme for the 2010 World Water Day reads "Clean water for a healthy world" (Laizad, 2007).

In developed countries people may not put a great deal of thought into the source of their water. In these countries, citizens can turn on the tap for fresh water which may also be enriched with fluoride for health. This is because of the stable or low population growth rate coupled with the availability of technology and skilled human resource to convert much of the salty water to fresh potable water (Loucks, 2000).

In developing countries however , and especially in Africa, of which Ghana is not an exception, a large proportion of the populations in many households have a number of challenges in accessing water which goes a long way to affect their productivity (Niemczynowicz, 2000) . The inadequacy of potable water is often accompanied by other lapses in sanitation such as open sewers and limited garbage collection (Sydney, 1999). Many of these public health issues affect the poor more than anyone else. Many nations and communities in the world strive to protect the safety of their water and to increase access to potable water. In these developing nations both governments and non-governmental organizations are working to improve water quality conditions alongside basic sanitation. This is in line with the need to protect water since the passage of the clean water Act in 1972. The real issue of access to

potable water by many communities especially in the developing world is hampered by rapid population growth which puts pressure on water supply (UNEP,1999).

The supply of potable water coupled with an increasing demand (access) has a number of implications on general productivity, since a lot of time and energy is spent on the search for potable drinking water by many poor inhabitants of the world. This has negative impact on the amount and quality of time spent on other economic or productive ventures which eventually results in low level of productivity leading to low incomes, low standards of living and hence poverty (UNEP, 2000). A lot has been done with regards to the health and environmental effects of inadequate potable water supply to the neglect of its effects on household productivity. The article aims at filling the research gap on the implication of potable water provision in the Wa Municipality. The study also serves as a guide for Metropolitan, Municipal, District Assemblies and central government in the formation of good policies on water supply.

2.0 MATERIALS AND METHODS

2.1 Study Area

Location and Size

The Wa Municipality is one of the nine District/Municipal Assemblies that make up the Upper West Region of Ghana. The Upper West Region is located in the North-Western part of Ghana and shares boundaries with La Cote d'Ivoire to the North-West, Burkina Faso to the North, the Upper East Region to the East and the Northern Region to the South.

The Wa Municipal Assembly shares administrative boundaries with the Nadowli District to the north, the Wa East District to the south-east and the Wa West District to the south-west. It lies within latitudes 1 40' N to 2 45' N and longitudes 9 32' to 10 20'W. It has a land mass area of approximately 234.74 square kilometres which is about 6.4% of the region (Wa Municipal Medium Term Development Plan-2008-2010-Unpublished).

The selected study communities in Wa Township are; Zongo,Wapaani,Kambali and Konta communities. Zongo is bordered to the south by Konta, to the North by Jejieyiri, to the East by the Ministries Blocks and the West by the Methodist Missions. Wapaani is bordered to the West by Dobile, to the East by Sawaba, North by Kambali and to the South by Nayiri. Kambali is bordered to the north by Manghu, to the south by Kpaguri, to east by the Methodist Missions and to west by Sombo .

2.1.1 Maps of Study Area

Figure 1, 2, and 3 are maps of the study area

2.2 Methods

Apart from the use of documented sources, the study also generated first hand information from the field. Purposive and simple random sampling techniques were also utilized in the study to select interviewees. The study relied on qualitative and quantitative approaches, taken in to consideration, sources of data, sampling techniques, data collection techniques, as well as data analysis and presentation techniques. The study area, Wa municipal was purposively chosen by virtue of the fact that it is the regional capital of Upper West region of Ghana and hence the head quarters of private and public water companies in the Upper West Region are situated in Wa Municipal. Qualitative tools such as interviews, observation, key informant interviews as well as focus group discussions were used for data collection. Quantitative tools, namely SPSS and Excel as software for data analysis as well as tables and charts were used for data presentation alongside descriptive analysis.

2.2.1 Sampling Procedure

The target group is households in Wa. Eighty households in four different sections in the township formed the sample size. The sections are Kambali, Konta, Zongo and Wapaani. Purposive sampling was used to select these communities because of the densely populated nature of the area coupled with the problems encountered by inhabitants in these areas as regards access to potable water.

The number of households in each section was selected proportionally based on the population of each section. These households were covered using the systematic sampling technique. Mathematically, proportional sampling is calculated by the following formula:

Total Sample Size divided by total population of the four communities multiplied by the total population of each community.

3.0 RESULTS AND DISCUSSION

3.1 Major Sources of Water and Management

. The main sources of water for households in Wa are pipe borne, wells, and boreholes. Of these sources, majority of the interviewees (62.5%) depend on pipes (pipe in house, pipe in neighbourhood and public stand pipe) . However only 22.5% of the interviewees rely on boreholes as their source of water. The reason for this is that most of the wells dry up in the dry season because the aquifers within the water table dry up. Others also maintained that water from pipes and boreholes are more hygienic and safer for drinking.

The implication of the above scenario is that since majority of the interviewees depend on pipes, in cases of interruptions such as lights out and pipe leakages on daily, weekly and seasonal bases, supply of water is curtailed forcing the people to walk long distances to fetch water from other sources which are mostly not potable. In this case more man hours which would have been used in other productive ventures are used in searching for water hence productivity is reduced. It may also be said that those who get infected as a result of drinking contaminated water do not go to work early and sometimes not at all. Other people who should have gone to work also spend enough of their working hours in catering for the infected persons.

Table 1 illustrates the various sources of water for the study area and the nature of interruptions that are experienced by households. The study revealed that households that depend on pipes in houses and pipes in neighbours house experience daily interruptions as a result of power failure and pipe leakages.

Those households that depend on public stand pipes usually experience weekly interruptions while those that depend on wells and boreholes experience seasonal interruptions. These interruptions are due to rationing as well as power failure and drying up of aquifers respectively.

Water resources in Wa are owned and managed by private individuals, the community or government. Many of the pipes are owned and managed by private water vendors.

In the case of those owned by government such as public stand pipes, supply of water is on rationing bases where each area gets water after every four (4) days which most respondents considered not desirable. On the other hand , the operation and management of those facilities owned by private individuals and the community remain the sole responsibility of the private water vendors. As indicated by figure 4. 10%, 13.7%, 75% and 1.25% of the water facilities in Wa are operated and managed by community, government, private individuals and both private and government respectively, as outlined by the interviewees.

3.2 Cost of Accessing Potable Water

The cost involved in accessing potable water can be categorized into the amount spent, time consumed and distance covered.

3.2.1 Amount Spent in Accessing Potable Water

Table 2 indicates the sources of water supplied to households and the amount spent as outlined by the interviewees. As illustrated by the table, on the average, households spend GHS 4.00 of their income on water in pipes in house, GHS8.00 on water obtained in pipes in neighbour's house, GHS7.50 on water from public stand pipes and GHS5.00 on water from boreholes. In the case of wells, it is usually free of charge, except for the initial amount used in constructing the well. It can be inferred from the data below that it costs less to obtain water from public stand pipes than on water provided by private water vendors. This may be due to the fact that government stand pipes are subsidized. The private ones are relatively high because the private water vendor might be more profit oriented than for social reasons. It can also be stated that the unit cost of water partly depends on its source.

3.3 Time Spent in Accessing Potable Water

Table 3 shows the sources of water for households in Wa and time spent in accessing water from the various sources as indicated by the interviewees. As indicated by table 2, households spent between 15 and 30 minutes of their time daily on obtaining water from pipes in houses and pipes in neighbour's house respectively because of the advantage of proximity. Averagely an hour is spent in accessing water from public stand pipes whiles 15 to 35 minutes is spent in accessing water from wells and boreholes.

During the study it was realized that the time spent by households in accessing water largely depends on the season. For instance, more time is spent in searching for water in the dry season whereas less time is spent in the raining season because rain water serves as a supplement. The boreholes and the wells also function effectively during the rainy season because aquifers are greatly replenished by surface water. It can also be said that the amount spent in accessing water depends on the location of the source of the water. Households that are closely located to water sources spend lesser time in obtaining water as compared to those far away from water sources.

3.4 Distance Covered in Accessing Potable Water

Table 4 illustrates the various sources of water as outlined by the interviewees as well as average distance covered in accessing water from these sources. For pipes in house and pipes in neighbours house, households do cover on the average five meters and twenty meters respectively. In the case of public stand pipes usually more distances are covered (that is about 400 meters) because they are often located at vantage places. With well water and boreholes, it is between fifty meters and three hundred meters depending on one's location.

The developmental implication of this situation is that households that depend on public stand pipes cover greater distances in order to obtain water and this poses a challenge in performing their domestic chores. More distance covered means more time consumed in accessing water.

3.5 Access to Water and Economic Activities

Those who are mostly affected by inadequate supply of potable water are hairdressers, pito brewers and food vendors. This is because they use a lot of water in their economic activities. The major sources of water for these people are pipe borne (pipe in house, pipe in neighbourhood and public stand pipes) and boreholes.

The developmental implication of this case is that as these people spend more time in accessing potable water, more productive hours are lost which eventually leads to low productivity. Where supply is interrupted by power failure, it means no business for the day.

4.0 SUMMARY OF MAJOR FINDINGS

The study has revealed that the supply and management of potable water in Wa is a shared responsibility of the government and private individuals. On the part of the government, management is in the hands of Aqua Vitens Rand Limited whose contract ended in June 2011.

The major sources of potable water for households in Wa are stand pipes, wells and boreholes. With respect to costs, majority of households spend between GHS4.00 and GHS8.00 weekly on potable water. Those who spend averagely GHS8.00 are into pito brewing and food vending. Again households spend much of their productive hours in search for water with many of them spending at least 30 minutes; this poses a lot of problems for the socio-economic development.

5.0 CONCLUSION

Water is a regional resource but its shortage is becoming a global issue due to increasing population, economic growth and climate change. Development of new sources of water besides its efficient use together with conservation measures should be an important component of any country's national water plan.

Findings from the study show that access to potable water supply is costly both in terms of money and time spent, which significantly hinders socio-economic development of households in Wa. This is in view of the fact that the amount spent, time consumed and distance covered in search of water does not encourage wealth creation since more productive hours are used.

6.0 RECOMMENDATIONS

Based on the challenges that households face in accessing potable water which affects their productivity, the following recommendations are made:

- Government, non-governmental organizations as well as philanthropists should work harder at expanding the water supply system in the municipality, that is increasing the number of stand pipes and boreholes
- Ghana Water Company in conjunction with the Municipal Assembly should provide stand by generators to help pump water in the municipality during periods of power outages.

- Private water vendors, philanthropist and non-governmental organizations should be motivated to partner with government in the area of water supply
- Development of alternative sources of water should be encouraged. For example development of rain water harvesting techniques will help augment the water supply situation.

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Figure 1: Map of Ghana Indicating Wa Municipal

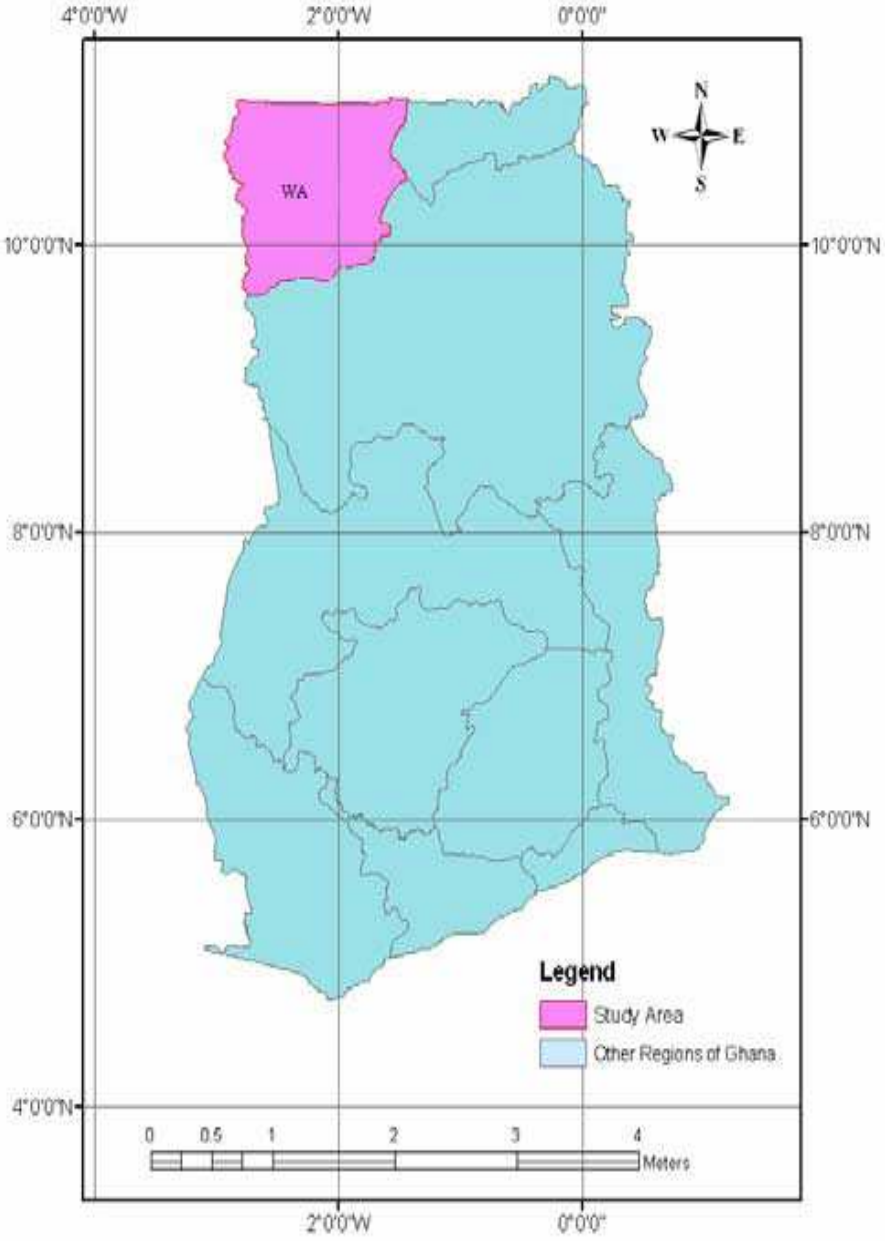


Figure 2: Map of Upper West Region Indicating Wa Municipal

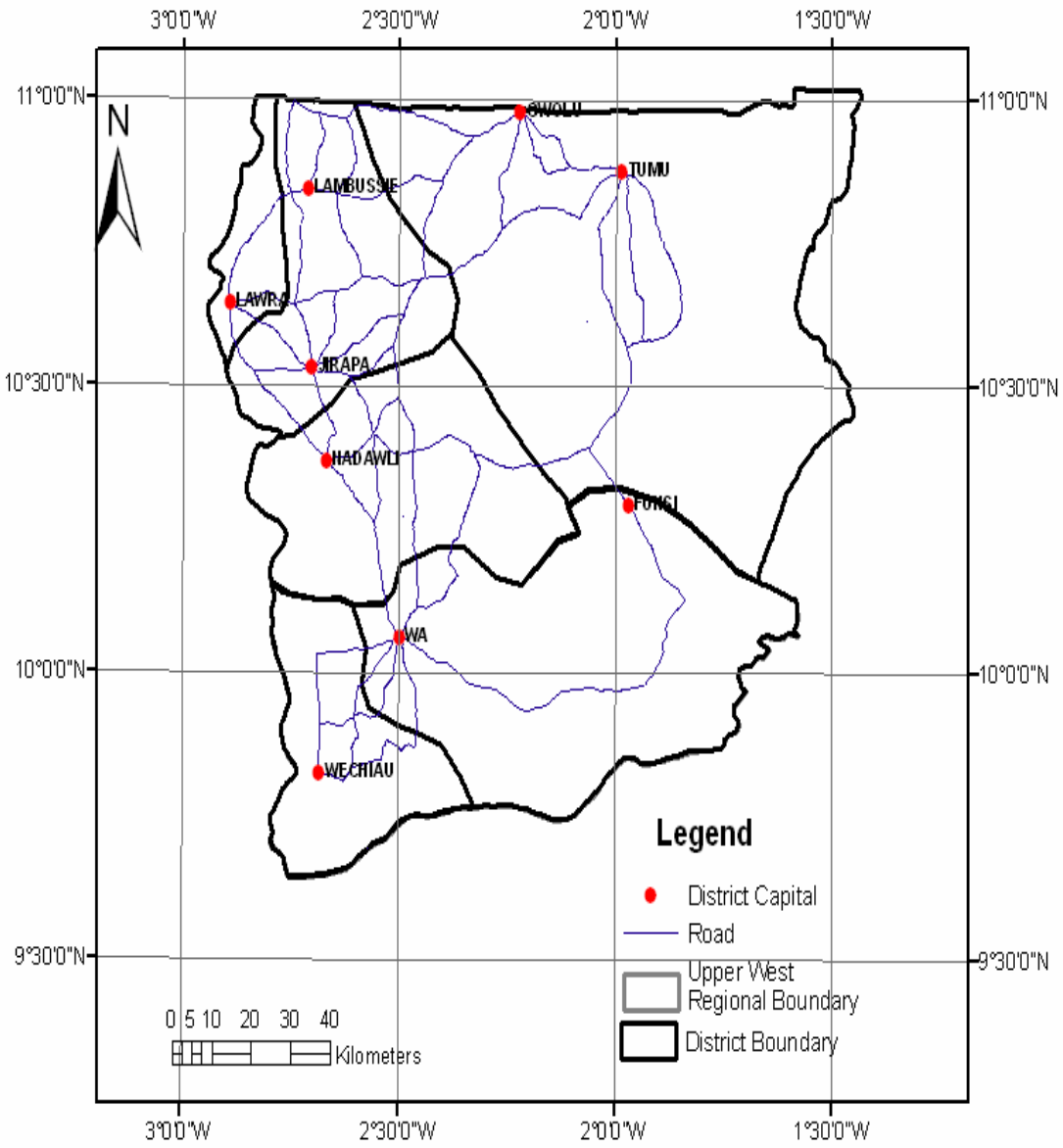


Figure 3: Map of Wa Municipal Indicating The Physical Layout of the Township

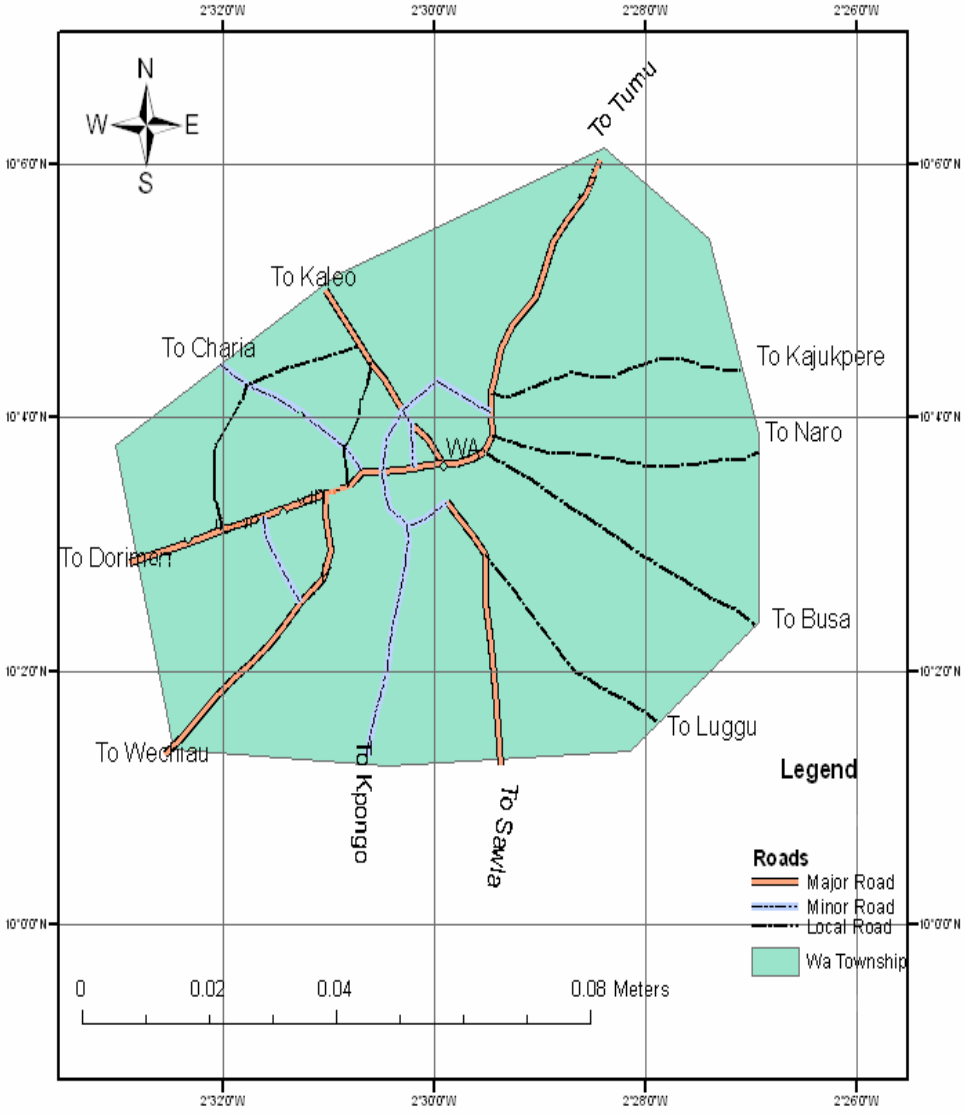
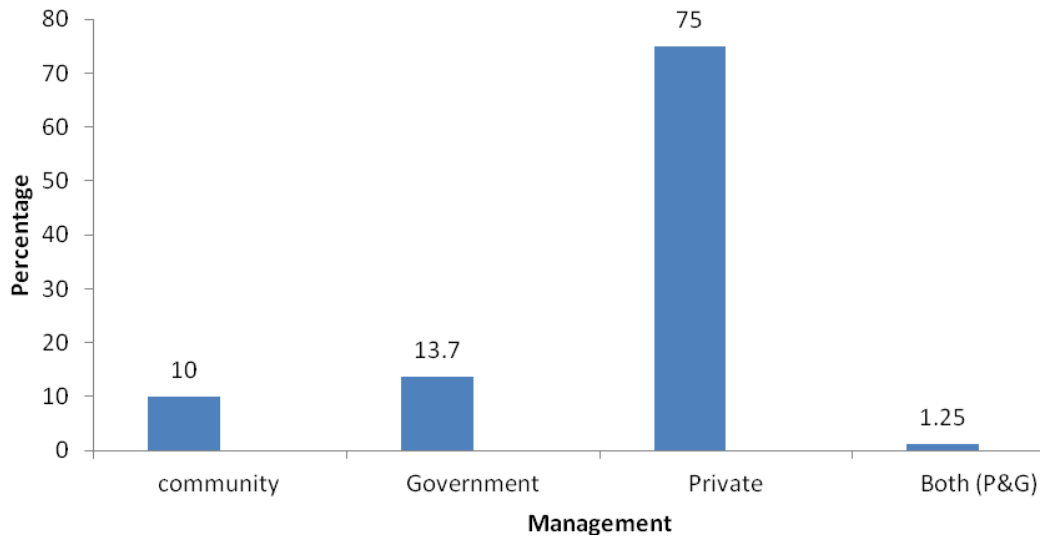


Figure 4: Responsibilities for Management of Water Supply



Source: Field Survey, May 2011.

P&G: Private and Government

Table 1 Sources of Water and Nature of Interruption

Sources Of Water	Nature of Interruption
Private Pipe	Daily
Pipe In Neighbours' House	Daily
Public Stand Pipe	Weekly
Well	Seasonal
Borehole	Seasonal

Source: Field Survey, May 2011

Table 2: Average Amount Spent on Water (Weekly)

Sources of Water	Average Amount(GHS)
Pipe in the House	4.00
Pipe in Neighborhood	8.00
Public Stand Pipe	7.50
Well	Free
Borehole	5.00

Source: Field Survey, May 2011

Table 3: Average Time Spent in Accessing Water

Source of Water	Time Spent(Average)
House Pipe	Less than 15 minutes
Pipe in Neighbours house	30 minutes
Public Stand Pipe	1 hour
Well	15 minutes
Borehole	35 minutes

Source: Field Survey, May 2011

Table 4: Average Distance Covered to Access Water

Source of Water	Distance(Average)
Pipe in house	Less than 5 meter
Pipe In Neighbours house	50 meters
Public Stand Pipe	400 meters
Well	Less than 50 meters
Borehole	300 meters

Source: Field Survey, May 2011

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