Water management and health in Ghana; Case study - Kumasi

A Study of the relationship between water management and health

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ABSTRACT

There have been multiple cases of drinking water related diseases in Ghana, particularly the cities. Kumasi, the second largest city is recording high figures of drinking water related diseases. The Ghana water and sewage company is supposed to provide adequate safe drinking water to the people. However, the company has failed to provide this service effectively. Various reasons have been given by the company on its inability to perform efficiently. Meanwhile the government decided lately to privatise water in the cities to facilitate access to quality water through what is called “FULL COST RECOVERY”. This attracted a lot of international companies to Ghana but this has also generated protest and demonstrations. The argument is that these foreign companies are basically profit oriented and considering the fact that most of the affected people are very poor, suggesting they cannot afford it.

The study is aimed at finding out the relationship between water management and health in the study area and how effective water management through full community participation could help provide adequate safe drinking water. The study was a non-interventional descriptive type using both qualitative and quantitative methods. It was conducted in Kumasi, the second largest city in Ghana. A total of 100 residents from the communities was selected through systematic sampling and interviewed. This includes 86 local residents and 14 key informer interviews. The study also relied on observation as well as some selected literature.

The results confirmed that drinking water related diseases is on the increase with the most affected people being the poor living in shanty and informal areas of the city. It was also found that most people in the city are willing to render any services to provide safe drinking water. But in relative terms, most of these people are very poor with high percentage of illiterates and may only contribute if there is a good relation and trust among all. It however appears that community participation is a good option for the city provided that stakeholders are made to play effective roles.
DEDICATION

This dissertation is dedicated to my family;

Agnes Osei- Akumiah

Akosua Serwaa Akumiah

Adu Affum Akumiah

Gabrial Akwasi Akumiah

Theresa Akumiah

You form a great and united team of which I am proud to be part.
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Acronyms and abbreviations

WHO - World health organization
UNICEF - United Nations Children Fund
IMF – International Monetary Fund
TWI- Local Language
SPPSS - Statistical Package for Social Scientists
GDP – Gross Domestic Product
NHS- National Health Insurance
HIPC- Highly Indebted Poor Country
FAO- World Food Organization
GPRS – Ghana Poverty Reduction Strategy
MDG – Millennium Development Goals
RCC – Regional Coordinating Council
PNDC- Provisional National Defence council
NDC- National Democratic Congress
WC – Water Closet
DACF- District Assembly Common Fund
KOLA - Bribe
UN – United Nations
GWSPI - First Community Water and Sanitation Project
WATSAN – Water and Sanitation Committee
UMP – Urban management programme
CDF – Community Development fund
WATSANCOs – Community Water and Sanitation Management Body

WORIDA – Water Resources Development Teams

IWM- International Water Management Institute

UNDP- United Nations Development Project

GTZ- German Development Agency

IRC- International Water and Sanitation Centre
CHAPTER ONE

1.1 Introduction and background

Water is a fundamental resource, integral to all environmental and social processes. Access to adequate safe drinking water is prime importance to many governments and international organizations since un-debatable it is the core component of primary health care and basic component of human development as well as a precondition for man’s success to deal with hunger, poverty and death. There is a growing concern everywhere that in the coming century, cities will suffer imbalances water quality supply, consumption, and population. Many regions of the world are already limited by the amount and quality of available water. According to World Health Organization (WHO, 2002), in the next 30 years alone, accessible water is unlikely to increase more than 10 percent but the earth’s population is projected to rise by approximately one-third. Unless the efficiency of water use rises, this imbalance will reduce quality water services, reduce the conditions health of people and deteriorate the environment and the world. The world’s population size and the rapid urbanization growth is increasingly a major issue in the world especially in developing countries. Cairncross (2002), shows that by the year 1975, only about 74 percent of the urban population in developing world had access to safe water, the figure increased to about 300 million in 1985 partly because of the International Water Decade which was an improvement, however, there were still about 25 percent of the people who were still not having access to safe water. The rapidity of which cities are growing put fears to the fact that human population with its associate sanitation problems will grow faster than increases in the amount of accessible quality water, per capita availability of quality water will decrease in the coming century.

Although, many international conferences as well researches have gone on in the past, yet little success have been achieved. Report from World Health Organization (2002) indicates that over 2.6 billion people were still suffering from poor water around the world. It is based on this that Heads of states and government from north and south, met and signed onto Millennium Declaration at the 2000 UN Millennium summit to end this among others as a matter of agency (WHO, 2004). The growing demands for adequate quality water resources create an urgent need to link research with improved water management, better monitoring, assessment, and forecasting of water resources and sanitation, issues with much emphasis on the roles of stake holders. It must be however emphasize that adequate water quality needs seems to have improved greatly in some regions and countries especially in the developed world but for poor nations this is still a major political debate. As observed by WHO-UNICEF (2004), while in 2002, countries like Japan, Australia, Austria Switzerland and Sweden have achieved hundred percent others such as countries in sub Saharan Africa are far below 50%. For instance, Guinea 6%, Liberia 7%, Niger 4%, Togo 15% and Ghana 46%.

It is interesting to note that most of these countries are in sub Sahara Africa where the region seems to be weak economically and infrastructural wise. According to Sapong (2000), the main source of water in regions includes untreated rain water from roofs, polluted rivers and streams, unprotected wells and bore holes. He went further to show that there is little to choose between sub Sahara rural and urban since the rural to some extent has only to deal with the quality while the urban have both the quantity and quality to deal with. This is however debatable.
Water related health problems are growing human tragedy, and according to WHO, (2003), it kills more than 5 million people a year with infants the most affected. This figure seems to be the highest as compared to wars and disasters (UNESCO 2003). The problems also prevent millions of people from leading healthy lives, and undermining development efforts by burdening the society with substantial socio-economic costs. This problem is of great significance in cities in developing countries, where polluted water, water shortages, and unsanitary living conditions prevail. Information from (WHO, 2002; WHO/UNICEF, 2004) says although access to water has improved greatly, access to safe water is still a major issue. The source quoted that about some 1.1 billion people rely on unsafe drinking water sources in developing countries and the lowest drinking water coverage rates are in sub-Saharan Africa (58 per cent) with a corresponding low sanitation coverage rates are in sub-Saharan Africa (36 per cent) which leads to many deaths especially among children through diarrhoeal among other water-related diseases. To meet the 2015 targets therefore will require that countries create the political will and resources to manage water especially in growing urban cities in sub Sahara Africa.

1.2 Research question

It looks like the concerted global effort in the late 1990 resulted positively in major developed and some few developing countries as over a billion people now have access to safe water representing about 83 per cent of the world’s population. However, the situation is still bad in sub Sahara Africa with 58 percent of it people relaying on unsafe water (WHO/UNICEF, 2004).

The growth of cities with its inability to provide adequate safe drinking water which mostly have significant effect is gradually becoming a major problem for African politician and the international communities at large. It is estimated that between 1990 and 2025, Africa’s urban population is expected to grow from 150 million to 700 million i.e. from 30% to 52%. Meanwhile, greater percentage of this urban population will be housed in informal settlements in large cities and this is where the settlements are usually unplanned and have little access to safe water supply. Currently Only 64% of Africa’s urban population have access to safe water supply (Djerrari and Janssens, 2004).

In Ghana, most of the present infrastructure in the major cities especially Kumasi was inherited from the colonial period almost half a century now. Infrastructure was plan based on a layout which might serve few people. Although, there has been a drastic improvement in the infrastructure, yet, with migration, market (industrialization), and the growth of an urban middle class, the population of these towns began to grow. The sole water managing body and the municipal government seems not to have the answer to providing adequate safe drinking water for the expanding city leading to serious yearly health casualties especially among the youth. Lately, there have been calls and pushes by the international community especially the World Bank and the International Monetary Fund on developing countries to privatise water in the cities to facilitate access to quality water by implementing what they call “FULL COST RECOVERY”. This seems to interest the government of Ghana as it hope that it will solve the water situation and eventually minimise water related diseases and helps in improving the standard of living of the people. The World Bank argument is that the governments of developing countries are too poor and too indebted to subsidize water and sanitation services. It therefore demands that if many people outside the “grid” of the pipe water system can pay for water from tankers which is usually higher than the total cost providing permanent quality water, then the people should pay
to cover all water system cost which must include: - Cost of operation, maintenance and capital expenditure (IMF/World Bank, 2001). There have since been a number of international companies trouping in the country to take advantage of the situation. The government had no option but to give contracts to some international organizations with the argument that they are better equipped to facilitate the provision of safe water.

To this extent, “what guarantee do we have that multinational water companies whose main interest is to earn profit will expand services to informal and poor areas of urban centres. How can we be sure that water will not be so expensive to scare the poor away and thereby leading to probable situation where the poor will go back to get water wherever there is water. Based on the questions above, there is need to investigate how the community can participate in the water management. Fortunately, low-cost, decentralized options are also beginning to attract the attention of many, including some NGOS, WHO, UNICEF etc. Full community based participation will enhance cost effectiveness; ensure simplicity and suitability for community-level planning, funding, and overall management ability to provide water to every part of the city.

Research aims

The general aim for doing this study is to find out how effective can water management such as the provision of safe adequate bole holes, rain harvest, managing the water company etc based on full community participation can help solves the problem of the inadequate safe drinking water.

1.3 Objectives

The major objectives of the study are:

- To present an overview of the present situation in the study area
- To find out whether there is the knowledge of community participation in water management
- To find out the willingness of the community to participate in managing their water.
- To assess the possible impact of water management based on community participation on health in Ghana
- The way forward and who should be responsible

1.4 Methodology

The study was a cross-section descriptive type with 100 selected interviews with maximum representation, supported by observations with some literatures studies.

1.4.1 Interviews

A total of 100 interviews were carried out guided by pre-structured interview sheet. Answers were mainly recorded. This was made up of:
(14) Key informer interviews

To gain some insight in the topic, 14 selected personnel were interviewed made up of one each from Ghana Water Company, Regional health services, Non governmental organization with water and health issues as its main objective, municipal government and 10 randomly selected local group leaders.

(86) Local citizens

The size was based on the assumption that at least 2 people each from the 33 suburb of the metropolitan will represent a fair representation of opinion of the problem. 86 people mainly adults made up of 46 females and 40 males from 86 compound houses were selected randomly for interview.

1.5 Data collection tool

A structured questionnaire consisting of both closed and open-ended questions was used in the collection of data from the 86 sampled individuals. Another set of unstructured questions were used for key informant interviews.

1.5.1 Observations

Considering the nature of the topic, the researcher used a week to personally do some observations and this helped to attained first hand information to help in the description of household sanitation and sources of drinking water behaviours for a one week period, by using a pre-structured observation sheet. This instrument included sections on household structural information (sources of water and their hygiene behaviour which includes location of water source, distance of water sources from potential sources of contamination such latrines, refuse dumps or pits and other public places as well as water run-offs systems) Again, the researcher went round to observe and took some pictures of some of the main sources of the water for the municipal. To be able to be fair, two other assistants were employed.

1.5.2 Literature

Several literature works related to the topic were consulted, this includes case studies, textbooks, newspapers and magazines and some other information from the internet.

1.5.3 Pre- test

The questionnaire was prepared after reviewing literature on the topic with the help of interview guide. Ten sample questionnaires were pre-tested at the metropolitan assembly as well as the community. The test findings were used to modify the guide and make it more respondent-friendly.

1.5.4 Research assistants
Four research assistants were identified and trained to assist. The training covered selection criteria, translation of the questions into the local dialect (Twi), field work and language skills.

1.5.5 Data analysis

Literature data collected is related to the data at the study area whiles the interviews and observations were assigned numerical codes based on statistical package for social scientists (SPSS) version 14.0 computer program. This helped in easy analysis where much description based on descriptive statistics of mainly percentage was used to draw conclusions. Again, pictures taken during observations were shown since they depict the really situation out the environment.

1.5.6 Assumptions

It is assumed that the information provided by the respondents during the administration of the questionnaires was accurate since personnel observations and secondary data collected confirmed them.

1.5.7 Limitations

It was detected that some few people may have been a little biased in their answers since either they belong to the ruling party or the opposition and for that matter either support or do not support a particular policy. However, their answers were logically verified.

1.6 Organization of the thesis

This work is in six chapters with sections and sub sections as shown below.
Chapter one presents an introduction and background, statement of the problem, aims and objectives, methodology, scope and organization.
Chapter two looks into water management in Ghana as well as water and health in Ghana.

Chapter three presents the physical, socioeconomic, housing and infrastructure conditions in the study area (Kumasi)

Chapter four presents the water and health situation in the study area

Chapter five presents the result of the study

Chapter six is made up of the state of the art / literature on the concept and cases of water management around the world.

Chapter seven which is last chapter, discusses the results of the study in relation to the objectives of the study and the current literature on the topic, challenges and the way forward
CHAPTER 2

Water and health in Ghana

2.1.1 Location

Ghana formed from the merger of the British colony of the Gold Coast and the Togo land trust territory in 1957 became the first sub-Saharan country in colonial Africa to gain its independence. It is the closest landmark to the centre of the world, and is located on the west coast of Africa, about 750 km north of the equator on the Gulf of Guinea, between the latitudes of 4-11.50 north and longitude 3.11 West and 1.11 East. Tema, the industrial city, which is adjunct to Accra, the capital city of Ghana, is on the Greenwich Meridian (zero line of longitude). Ghana is bounded on the north by Burkina Faso, on the west by La Cote D'Ivoire, on the east by Togo and on the south by the Gulf of Guinea (Yvette, 2004). The country has a total land coverage of 238,537 km2 (92,100 sq. miles) with a total stretches of 672 km north-south and 536 km east-west. Its coastal area consists of plains and numerous lagoons near the estuaries of rivers. The land is relatively flat and the altitude is generally below 500m, with more than half of the country below 200m. The Volta River basin dominates the country's river system and it is 8,480km long which consist of Lake Volta, (the largest artificial lake in the world), formed behind the Akosombo hydro-electric dam (Yvette, 2004).

2.1.2 Climate

Ghana has a tropical climate. The temperature is generally 21-32°C (70-90°F), while the humidity is 50 to 80%. In most areas, temperatures are highest in March and lowest in August after the rains. Variation between day and night temperatures is relatively small, but the northern section of Ghana has hotter temperatures and some seasonal temperature variations because it is farthest from the moderating influence of the ocean in the south, and closest to the Sahara Desert. There are two rainy seasons, the major one from March to July and a minor from September to October, separated by a short cool dry season in August and a relatively long dry season in the south from mid-October to March. The rainfall is influences mainly by the rain bearing monsoon wind in the south, the southing coastal areas together with the middle belt receives a fair share of rain while the northern regions have little rain. Annual rainfall in the south averages 2,030 mm but varies greatly throughout the country, with the heaviest rainfall in the south western part. Mean rainfall in the southern regions is around 1800mm but this decreases to less than 1000mm in the northern fringes (Benneh, 1990).

2.1.3 Administrative divisions, Population and demographic characteristics of the Economy

The country practices a decentralized system of government where the central government administration has been fostered at local government level. There are 10 Regional Co-coordinating Councils with 110 Metropolitan, Municipal and District Assemblies, which serve to involve grassroots participation in the formulation and implementation of government policies and the general development of their areas of jurisdiction.
Ghana’s population of 20,922,000 (2003 est) with a growth rate of 1.6% and the density of 88 per sq km is one of the most populous countries in Western Africa, second only to Nigeria. The population has gradually triple since achieving political independence in 1957, from about 6 million to nearly 18 million in 1996, and is expected to increase to 27 million by 2020. The fast rapid growth of its population has seen urban density rocketing mainly as a result of migration from the rural communities. Out of the total population, 43% of it is under 15 years as a result of a combination of high fertility and declining mortality, however this seems to be changing mainly because of falling fertility (Arjun Adlakha, 1996).

Well endowed with natural resources, Ghana has roughly twice the per capita output of the poorer countries in West Africa. Even so, Ghana remains heavily dependent on international financial and technical assistance. Gold, timber, and cocoa production are major sources of foreign exchange. The domestic economy continues to revolve around subsistence agriculture, which accounts for 36% of GDP and employs 60% of the work force of mainly small landholders. Ghana opted for debt relief under the Heavily Indebted Poor Country (HIPC) program in 2002. Policy priorities include tighter monetary and fiscal policies, accelerated privatization, and improvement of social services (Sarpong, 2002)).

Ghana has a diverse and rich resource base. The main stay of the country is mainly primarily agricultural. Nevertheless, most people now engaged in other the secondary sector such as trading the country depends so much on cocoa and cocoa products, which typically provide about two-thirds of export revenues, timber products and other non traditional products such as coconuts and palm products, she nuts, coffee, pineapple, cashew, pepper, cassava, yams, plantain, maize, rice, peanut, millet. Although Ghana is a poor country, its industrial base is relatively advanced compared to many other African countries. There are many Import-substitution industries which includes textiles, steel, tires, oil refining, flour milling, beverages, tobacco as well as car, truck, and bus assembly. Also, tourism has become one of Ghana's largest foreign income earners (ranking third in 1997), and the Ghanaian Government has placed great emphasis upon further tourism support and development (Naylor, 2000).

2.2 Water resources

The main sources of water supply in Ghana include surface water, ground water and rain water. According to FAO (2005), Rainfall although not reliable, has a mean ranging from 2150mm in the south-western part to 800 mm on the south-eastern. Rain harvest is not so popular among urban settlers. Nevertheless, it provides a significant amount of domestic water in the southern rural areas particularly in during the humid months of May, June, July and August. Sarpong, (2005), estimated total annual run-off as 56.4 percent. The main surface waters is made up of the Volta river system which covers about 70 percent of the entire country and it consist of rivers Oti, Daka, White and Black Volta, Pru, Sene and the Afram rivers. Rivers Bia, Tano, Ankobra, Pra which drains the south-western regions also covers about 22 percent of the country, while the coastal zone is drain by rivers Ochi- Nakwa, Ayensu, Densu and the Tordzie takes charge of about 8 percent of the country (FAO,2005). Greater part of the rural Ghana relies on ground water which is often extracted from boreholes while urban Ghana gets about 95 percent of its waters from surface water. The main rock formation is the sedimentary and the non sedimentary which provides quality ground water but for few instances where there is localized pollution (Sarpong, 2005).
Table 2.1 Sources of drinking water in Ghana

<table>
<thead>
<tr>
<th>Source of drinking water</th>
<th>Ghana</th>
<th>Urban</th>
<th>Rural</th>
</tr>
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<tbody>
<tr>
<td>Pipe-bone</td>
<td>41.6</td>
<td>80.3</td>
<td>18.8</td>
</tr>
<tr>
<td>Well</td>
<td>33.9</td>
<td>10.8</td>
<td>47.2</td>
</tr>
<tr>
<td>Natural Sources</td>
<td>24.6</td>
<td>8.80</td>
<td>33.9</td>
</tr>
</tbody>
</table>


2.3 Water management in Ghana

According to Turney (2007), Water Resources Management is seen by many institutions as the integrating concept for a number of water sub-sectors such as hydropower, water supply and sanitation, irrigation and drainage, and environment and this ensures that an integrated water resources will incorporate social, economic, environmental and technical dimensions which enhances accountability in the management and development of water resources. However, in Ghana, there are different institutions managing these related sectors. The main body managing and providing drinking water is the Ghana Water Company.

2.3.1 Ghana Water Company

Since independence, the state owned company (Ghana Water Company Limited) has been managing water supply systems in almost all urban areas especially administrative cities with the state providing the finances for both technical and human resources. The company’s task was mainly to supply water however, it relayed on professionals outside the organisation for technical studies and other detailed engineering designers. The company could not cope with rapid population growth and urbanization. It was unfortunate that the company had no hand and could not integrate with water sub-sectors such as hydropower, sanitation, irrigation and drainage, and environment which could have ensures that social, economic, environmental and technical dimensions are taken into account in pursuance of proper management and development of water resources. The other sub sectors were under different institutions and this contributed to create poor sanitation and poor hygiene in most urban areas. A paper by Well (2005), reveals that since 2000, the company have been experiencing considerable deterioration to the extent that about 40 percent out of the total 70 percent taps had water running through them and this was also irregular and the urban population has to some extent wait for days before any water runs in their taps. The company had to deal with lack of autonomy with weak management which also resulted in debt. In 2002, it was estimated the company was indebted to the tune of $ 400 million and about 50 percent of all waters produced were not able to be accounted for. It came to light that in the year 2003 alone, losses in operation were cost about $ 34 million – almost 100 percent of the total revenue and the urban population have since been suffering to get water and therefore had to relay on other source of getting water (Well Factsheet, 2005). Apart from the Ghana Water Company, there is some Non-governmental organization (NGO) and some few local based private companies who are involved in managing and provision of water particularly in the urban areas.
2.4 Water and health in Ghana

All major cities in Ghana are faced with numerous health problems which normally originate from its environment. It is often believed that there is a general higher standard of living in urban areas as compared to the rural areas nevertheless a visit to Ghana reveals that greater portion of urban Ghana lacks basic necessities including the supply of adequate safe drinking water and poor sanitation. While areas of residential for high income settlements have constant supply of safe drinking water, shanty, peripheral urban as well as low income settlements have little and to some extent no access at all and often venerable to water contaminations and poor hygiene. The poor living in informal urban areas are generally vulnerable to water borne diseases because of uneven coverage of projects providing clean drinking water, with this situation, most of these people therefore relays on water from unprotected water sources. And it is this reason why Ghana is said to be among African counties that suffers by far the highest infant mortality and water-related disease in all world, (WHO, 2003).

Waterborne diseases, such as diarrhoea, cholera, typhoid, hepatitis A, dysentery and vector-borne diseases, such as malaria, yellow fever, and sleeping sickness are still rampant in Ghana causing severe human suffering and responsible for many deaths. Also, the presences of toxic substances, such as pesticides or heavy metals, due to excessive or deficient amounts of natural substances such as fluoride or iodine have serious health implications.

A researched conducted by Water Aid (2005) in Ghana shows that out of the total population of about 20.2 million 20.2 (11.8/8.4) million in 2003 (rural/urban), it was detected that only 44%/61% of the people have access to safe drinking water and there was a corresponding record of 11% and 40% rural and urban respectively of access to good sanitation. This shows that more than 60% of the total population in Ghana lack basic sanitation. It is therefore not surprising that the country recorded 3678 reported cases of guinea worm in the year 2000 and diarrhoeal diseases rose to the third most commonly reported cases in health centres across the country (Water Aid, 2002).

Table 2.2 Water sector assessment, Ghana (May, 2005)

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<th></th>
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</thead>
<tbody>
<tr>
<td>Population 2003 – total</td>
<td>20.2 (11.8/8.4)</td>
</tr>
<tr>
<td>Population projection for</td>
<td></td>
</tr>
<tr>
<td>2015 – total</td>
<td>26.6 (14/12.6)</td>
</tr>
<tr>
<td>Population growth rate</td>
<td>1.5%/3.5%</td>
</tr>
<tr>
<td>Present access to safe</td>
<td>44%/61%</td>
</tr>
<tr>
<td>water – (rural/urban)</td>
<td></td>
</tr>
<tr>
<td>Present access to basic</td>
<td>11%/40%</td>
</tr>
<tr>
<td>sanitation – (rural/urban)</td>
<td></td>
</tr>
<tr>
<td>Productive days which</td>
<td>1.6m</td>
</tr>
<tr>
<td>would be gained with 100%</td>
<td></td>
</tr>
<tr>
<td>access to water and</td>
<td></td>
</tr>
<tr>
<td>sanitation</td>
<td></td>
</tr>
<tr>
<td>School days lost to</td>
<td>3.4m</td>
</tr>
<tr>
<td>diarrhoea by five to 14</td>
<td></td>
</tr>
<tr>
<td>year olds</td>
<td></td>
</tr>
<tr>
<td>Monthly number of</td>
<td>5700</td>
</tr>
<tr>
<td>households requiring</td>
<td></td>
</tr>
<tr>
<td>access to reach water MDG</td>
<td></td>
</tr>
<tr>
<td>Monthly number of</td>
<td>6900</td>
</tr>
<tr>
<td>households requiring</td>
<td></td>
</tr>
<tr>
<td>access to reach sanitationMDG</td>
<td></td>
</tr>
</tbody>
</table>
## Increase required (on performance since 1990)

<table>
<thead>
<tr>
<th>Description</th>
<th>Increment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current annual water spend</td>
<td>1 $17m</td>
</tr>
<tr>
<td>Water/sanitation sector annual finance need for MDGs</td>
<td>$85m</td>
</tr>
<tr>
<td>Water sector annual MDG spending gap</td>
<td>$68m</td>
</tr>
<tr>
<td>Annual national debt service payment</td>
<td>$670m</td>
</tr>
</tbody>
</table>

Source (Water Aid, Ghana.2005)

Water is seen as the conveyance medium of pathogens (disease-causing organisms), and water also provides the habitat for vectors and intermediate hosts of pathogens. Water plays a conveyance role for micro-organisms and chemical pollutants. The issue for urban Africa relates more to drinking water, however also we can connect water to food crops and livestock. It is already known fact that Poor sanitation is the most critical determinant of contamination of drinking water with micro-organisms. Pollution from urban and industrial and runoff of agrochemicals is mainly responsible for chemical contamination in almost all the ten regional capitals in Ghana. Talk about diarrhoea, trachoma, cholera, hepatitis, typhoid, hookworm, round worm etc and every Ghanaian will tell you “I had this or that attack on this day or that year”.

### 2.5 The wind of privatisation

With the growing concern of providing adequate safe drinking for the people, the World Bank, together with other international organizations suggested and kept pressure on developing countries to privatise urban water. The World Bank thus provided Ghana with the initial interest free loan of $150 million for the first phase of the proposed plan. The study found out that out of the initial five companies who bid and were selected for water services in the capital Accra such as the Suez, Veolia, Saur and Biwater had annual sales larger than the GDP of Ghana. The World Bank believes that with this and higher payment from consumers, these companies will have both revenue and the incentives to supply and extend pipes to those relying on unsafe sources. But there are a lot of critics from all parts of the country. A lot fear that higher prices will rather limit the poor for consuming safer water. In Accra for example, a report of the international fact – finding mission on water sector reform in Ghana (August 2002) reveals that price increases have already forced the poor to cut down drastically on their use of water. Some have resorted rather to walk distance to fetch free water or for a token fee as they could not bear with the 95 percent increases fees charged in this post-privatization period. Many interest groups including civil societies such as the women’s groups, teachers, trade unions, public health workers, environmental groups, disabled organizations and students under the name “Ghana National Coalition Against Privatization of Water” to oppose the World Bank led-backed proposal to privatize the urban water supply under the grounds that:

- That water is a fundamental human right, essential to human life to which every person, rich or poor, man or woman, child or adult is entitled.

- That water is not and should not be a common commodity to be bought and sold in the market place as an economic good.
· Water is a natural resource that is part of our common heritage to be used judiciously and preserved for the common good of our societies and the natural environment today and in the future.

· Water is an increasingly scarce natural resource, and as a result crucial to the securities of our societies and sovereignty of our country. For this reason alone, its ownership, control, delivery and management belong in the public domain today and tomorrow.

· The public sector is legally and constitutionally mandated and designed to represent the public interest. The essential purpose of the private sector on the other hand is to make profit not to promote the public good. Any public benefits arising from the private sector's activities are incidental not designed. As a result, the private sector cannot be trusted with the public interest.

· Citizens have the right to effectively participate (as distinguished from being informed) in the shaping of public policies which fundamentally affect their lives such as the control of water, and that government has a responsibility to enforce this right.

· Community participation in the management of water systems is valid/legitimate, essential and beneficial to the overall effectiveness in affordable and sustainable water delivery.

· Water management policies should be designed to ensure social equity such as gender equity, public health and environmental equity.


There are many examples around the world which shows that this could lead to a disaster. For example, the Kwazulu- Natal (South Africa) situation in 2001 cholera outbreak which killed many people was traced to the imposition of high water charges which forced the poor to rely on polluted river supplies for their water.(The World Traveller, 2001).

2.6 Challenges

The bill is in its final stage. From whatever views one holds either in support or criticize water privatisation in Ghana, there is no denying fact that Ghana needs to substantially increase the outputs from its water sector with the provision of water not only to formal areas but informal areas as well. This should be linked with sanitation and hygiene of the environment if only the nation aims at reduction of the health risk of its citizens. Nevertheless, this requires good management and finances which could easily be provided if the communities are allow to participate fully in managing and financing projects and this will further enhance monitoring and capacity building to the benefit of all including the poor living in shanty and informal urban areas.
CHAPTER THREE

Kumasi, the study area

3.1 Location and size

Kumasi, the capital of the Ashanti Region is the second-largest city in Ghana with a very rich history behind it. The garden city, as it is popularly called because of its richness in flowers and beautiful trees and various species is located on (6 35’ – 6 40’N) 30’ W and longitude 1 30’ 135’ W 6 40’ N. Almost in the heart of Ghana, about 300 miles north of the equator, 100 miles north of the Atlantic Ocean (gulf of Guinea) and 100 miles north of the Prime Meridian with relatively flat land. Greater part of its vegetation is made up of forest (tropical vegetation) (Benneh, 1996). With a population of more than 2.5 million, the rate of it expansion and growth is so alarming that apart from non recognize settlements in its peripheral as well as slum and shanty settlement, the city has more than 33 suburbs made up of Abuahia, Adeibra, Adiebaba, Ahinsan, Akrom, Ampabami, Anumanye, Asokori, Asuabua, Ayeduasi, Ayija, Bantama, Bomso, Bremang, Brunkum, Buokrom, Duasi, Esen, Ewemasi, Hemng, Kantinkronu, Kanyasi. Central Kumasi, Kuronum, Kwadaso, Kwapra, Tafo, Nyanchreiniasi, Owabi, Pankroun, Suame, Tanoso, etc. (Sarpong, 2002).

Figure 3.1 Map of Ghana showing the city Kumasi.

Source: Virtual explorers.
3.2 History

Asante (Kumasi) kingdom rich in gold, dominated the states in modern Ghana from the late 17th through the late 19th century where one of the greatest kings, Osei Tutu founded Kumasi after a victory over the British with the help of his mystic friend and sage, Okomfo Anokye. It grew and became the largest and most powerful of a series of states formed in the forest region of southern Ghana by people known a as the Akan. The Kingdom presently ranks among the few monarchical states in the world, with a long and sustained system of governance. At present, a descendant of King Osei Tutu, Nana Osei Tutu the second is the king, receiving allegiance from the people within the democracy of Ghana, and it is believed to be the richest king on Africa's West Coast. The king resides in Kumasi, Manhyia Palace, and it is one of the city's most spectacular sights with people travelling weekly to pay homage to him. Legend has it that a golden stool in the palace descended from heaven, and that near the palace grounds, a copper sword was said to have been driven into the ground by an ancient priest, which no one has been able to remove by any means. The people have protected this legend and this has made the seat very important among historians, tourists and even politicians (Clark, 2003).

3.3 Economy

Trade and commerce has played an important role in the economy of Ashanti kingdom since early times. As early as 300 CE, camel caravans and human carried salt gold, food products from this part of Ghana to the northern territories including countries outside the borders of Ghana. The largest market, Kumasi Central Market is located at the heart of the city within a forest zone. As a result there are many forest products and related industries that account for the prosperity of commercial activities in Kumasi. Gold-mining, teak harvesting, breweries and agro-processing also dominate the economy of this largest Millennium City, in addition its region boasts of a rich cultural heritage particularly evident in smaller surrounding towns. Other riches abound, wealth derived from substantial gold deposits and agricultural products. Cocoa and high-quality hardwood product made up carving form the major exports. Another striking fact of this city’s culture is the liveliness of the street trade sector: majority of the dropped out school children and many men and women finds labour in selling products on the street. This is made up of hawkers, service providers and petty shop operators etc. As a result of lack of space, roads and drainage systems are blocked and are been used as shopping sites for many unregistered traders where anything from foodstuff, jewellery, livestock and herbal medicine can be purchased through lively bargaining and the most unfortunate situation is that all wastes are seen been dumped in streams and other water ways including gutters. Above this, much of the city’s population lives and farms in peri-urban settings, having been forced off the farms by crop failure and lack of market access by taking advantage of streams around (Dinye, 2005).

3.4 Administrative

Politically, Ghana’s effort towards constitutional democracy has created good platform for the people at the grassroots to partake in decision making couple with the fact that the city emerged as a result of oneness of its people have contributed towards the local government structure is based on a decentralized administrative under Ghana’s constitutional instrument- Act 462 (1993) and LI 11614 (1998) where the Metropolitan Chief Executive is the Political/Administrative head of the metropolis with 4 sub-metro councils, 24 Lower Councils.
and Unit Committees based in different suburbs. Base on this political structure, the chief executive of the metropolitan assembly is supposed to be appointed by the central government, but this is subject to the approval of the assembly. The chief executive, in effect, acts as both the representative of the central government as well as the head of the local government. This local government system has a four-tier Metropolitan Assemblies structure of Metropolitan Assembly, Sub-Metropolitan Councils, Town Councils and Unit Committees with the Metropolitan assembly as the Coordinating centre. This assembly is the highest political and administrative body in the Metropolis and it is composed of eighty-seven (87) Assembly members including the Metro Chief Executive and Chaired by and elected Presiding Member. Sixty- (60) of the Assembly Members is -elected by Universal Audit suffrage to represent the sixty electoral areas in the Metropolis. The rest are appointed. Members of parliament in the Metropolitan Constituencies are equally members of the metropolitan Assembly but with out any voting rights. Hitherto, as mandated by the local council act 462 of 1993 and legislative instrument 1614, the assembly is supposed to improve the quality of life of people in the metropolis and these is done with the help of variety of skills and professionals employed to man its various posts created to operate its organizational structure and this is facilitated by occasional monitoring by the King (Ashantihene) who is traditionally and culturally the father of all within his jurisdiction and is believed to politically more powerfully than all (Devas, N and Korboe, D. 2000).

The main functions include the following:

1. Responsible for the overall development of the Metropolis and ensure the preparation and submission of development plans and budget to the relevant central government Agency/Ministry through the Regional Coordinating Council (RCC)

2. Formulate and execute plans, programs and strategies for the effective mobilization of the resources necessary for the overall development of the Metropolis.

3. Promote and support productive activity and social development in the Metropolis and remove any obstacle to initiatives and development.

4. Initiate programs for the development of basic infrastructure and provide municipal works and services in the metropolitan area.

5. Responsible for the development and management of human settlement and the environment in the metropolis.

6. Co-operate with the appropriate national and local security agencies responsible for the maintenance of security law and order and public safety in the metropolis.

7. Initiate, sponsor or carry out such studies, as may necessary for the discharge of any of the functions conferred on the Metropolitan Assembly by Act 462 or other enactment.

8. Perform such other functions as may be provided under any other enactment.

Source: KMA
All these are done through committees and sub-committees such as Development planning, Social Services, Works, Finance and Administration, Revenue Mobilization, Education, Public Relations as well as Environmental and Health who are either elected from the local (various suburbs) or professionals.

### 3.5 Land and/Property ownership

Land ownership in Ghana runs parallel to the western world in Ghana. And this is seen especially in Ashanti (Kumasi) both during pre-colonial and at present. All lands in Ashanti are claimed by lineages and the traditional leader (King of Ashanti) is the custodian of all Ashanti lands. Although one can see ideal or fallow lands, yet there is no free land what so ever in Ashanti since is believed and claimed that it is the property of their ancestors and can never be given out entirely. A combination of transitory property-ship, kinship, reverence for the ancestors and the trust in the spiritual power of the earth has brought about this, which is popularly called land tenure in Ghana. There is nothing like property right in the matter of either private or state ownership. All lands in Ashanti belong to the King as he is in theory the political and religious leader and it is only through him that elders and headmen can have land (Mr. Tutu, Pers com, 2006; Land Commission, Ghana, 2006).

Recently, the Ashanti king (Asantehene) issued an ultimatum to the government of Ghana to prepare to pay restitution or reparations on lands been used by the government since 1943 because the government only acted as a trustee for the land and the said amount has to be predetermined by the King. "The Asantehene had as well warned the government (Lands Commission) to prepare to account for the accumulated royalties for the land they managed all these years, adding teasingly 'I will not take peanuts' (Tawiah, 2006). The significant of this is that “He” controls land and resources including water resources under his jurisdiction and that “All” had to survive by a single decision by one man, although he is ruling with a council and he is chosen to serve his people.

### 3.6 Housing

There are different kinds of housing in this Metropolitan, but the most common is the compound and the villa households as well as the one-roomed wooden/ sleet shacks found in shanty and slums areas. A research by Whittington, et al. (1992), reveals the following housing conditions of the metropolitan. 95 percent of all households live in compound houses (buildings having many single rooms housing many families) with the average size of 4.6 persons per each room and an average size of each single room of about 12 ft by 10 ft, and the average number of people in an apartment building (compound house) is usually above 50. In areas such as the heart of the city about 90 percent of occupants are mostly renters. Characteristically, there is no room for occupant to cook, bath or wash and these houses lack basic sanitation including safe drinking water. A visit to the old central residential areas of Ashanti New Town, Roman Hill, Fante New Aboabo, Asafo and Bantama shows a single and two- or three-storey compound houses housing more than 100 people. However, for those who live in shanty/ slums (informal areas), people had to walk for several kilometres for public utility such as water and toilet, because characteristically, about 90 percent of these people are poor migrants from the northern regions of Ghana and with higher unemployment rate and the few who are working, are among the least
income groups in Ghana. Residence always had to walk many distance for this amenities and this is where most women and children spent most part of their day. The few who live in villa/residential area are either politician or rich businessmen and women or relatives of a person who resides and work in western countries or the US. And this is where almost every amenity is provided either by the state or from their pockets.

3.7 Informal settlement

Kumasi, along with history and legend, and having built a capital from the famous Ashanti Empire as well as making it the seat of the Golden stool (Manhyia Palace), the city, situated in the centre of Ghana, anchors the Ashanti region and the rest of Ghana, consequently, has very strong linkages to other parts of the country especially the north and with its many peri-urban medium and smaller towns is believe to be the economic giants. The prosperity of these surrounding towns is directly tied to the economic wealth of this city.

The people of the region are known for their entrepreneurial spirit and this is why, the city’s central market “Keteja market” rivalling only to Onitsha in Nigeria as the largest open-air market in West Africa. Presently, this spirit is seen driving a vibrant import and export trade in minerals, timber, furniture, cocoa, and non-traditional handicraft, carving, textiles, and garments products. In addition, there are also, an evolving of other non-traditional household goods, jewellery, agricultural products and many implements in the manufacturing sector. The soil support farm products such as: maize, cashew, yams, and medicinal and horticultural plants production. A wide range of dedicated professional class of lawyers, doctors, engineers, and administrators have emerged to anchors these activities and these has really contributed to attracting people from all walks of life to migrate to share and earn a living for themselves (Devas and Korboe, 2000).

3.8 Migration and urbanization

Known and believed to have all the socio-economic amenities as compared to the surroundings including all the northern regions of Ghana, Kumasi, which used to a low-density city with its beautiful scenery, is expanding rapidly according to the assessment of various population censuses by the researcher. It’s wealth which includes different kinds of minerals such as gold, diamond etc, its economic power with the largest open market in Ghana, its position with regard to other parts of the country, easy access with first class roads, quality education offered by over 10 second cycle education and two popular public universities and a lot of public as well as private first cycle institutions, rich culture and sports which serves as entertainment, its peaceful political, social and economic atmosphere has made the city not only attractive to the people of Ghana but west Africa migrants alike (Devas and Korboe, 2000). It is important to note that more than 60 percent of the settles were born, either outside the region or other parts of the region with greater parts coming from the northern regions which includes migrates from southern Burkina Faso (White et al., 2002) and most of these migrants as poor as they are settled in slums and shanty area of the city. It is expected that as people migrate and the city expands in terms of population, socio-economic amenities including drinking water and sanitation will improve. However, this is where the city is facing a lot of problems in terms pressure on these amenities including housing, employment, transportation, education and above all land (Tawiah, 2007, Pers.Comm.). Information available at statistical service Ghana reveals an alarming rate of population increase at the Kumasi metropolis. With a population of 346,339 in 1970 population
census in Ghana, it rose to 469,628 and 1,170,270 during the 1984 and 2000 population census respectively and it now estimated to be well over 2,000,000 (G. S. S., 2002).

3.9 Activities of Peri-Urban and its influence on the city

According to IWM I research in Africa (2007), there are so many primary activities in the city boundary but commercial farming dominates all. The paper reported that about 1,500 registered and uncountable unregistered commercial farms in the city boundary with majority engaging in poultry. 200 vegetable farmers and about 80,000 households with some kind of backyard garden in the production of vegetables such as lettuce, cabbage, sweet pepper and spring onions, poultry products and milk consumed in Kumasi are derived from farming in this area. Majority of these farmers are engaged in what is popularly called share cropping tenancy agreements meaning farmers give half or a third, respectively, of total farm produce to the landowner as payment for use of the land. And this render them penny ness to develop water and sanitation capable of serving their needs. It is therefore not surprising that apart from natural rainfall, the main sources of water for this type of farming in this area are the streams and rivers supposed to be supplying the city with pipe water. The farmers cultivate these crops year round, mostly with manual irrigation. Another disturbing issue is the free range livestock of more than 5000 made up cattle, sheep, goats, and pigs which drink and bath in these waters meant also for direct human consumption (Nsiah, 2000).

3.10 Income and poverty levels

According to World Bank (1989) report, the general per capital annual income in 1987 was $390. Although, it is virtually impossible to find the current employment, income and poverty levels as the researcher could not lay hands to any data or research on that. Nevertheless, the general characteristics of the socio-economic situation in the city clearly suggest that majority of the people are very poor. With the nature of the housing conditions vis-à-vis the overcrowding conditions of the city as well as the emergence of many slums and shanty areas. Despite that majority of the people seems to have had some form of education at least in the basic level; it is the informal sector which is giving majority livelihood. It is also clear from open market situation where school children are seen selling dog chains and ice water during school hours along the streets with man and women moving up and down, struggling to find space to sell anything they get hold of is truly a sign that unemployment, income and poverty levels are very high in this city.

3.11 Educational levels

Statistics on educational attainment in the city by KMA source puts it that about 42.0 percent of adult population had at least some form of education. It also show the metro enjoy almost 95 percent of children younger than 6 years however the figure begins to decreases as one progresses, however, basic developmental key issues such as polities, transparency, accountability, awareness etc is understood by all with the help of the power of the mass media.
CHAPTER FOUR

This chapter is about the operational and functional linkages as well as the relationship between water management and human health in the study area.

4.1 The concept of safe adequate water in the study area

From the observation and the interviews, it is clear that the metropolitan has two main areas in terms of socioeconomic division, the section made up government residential areas as well private rich homes have somewhat adequate safe drinking water (pipe borne water and machine drilled borehole). This zone covers about 30 percent of the city while the other 70 percent, is made up of the commons (mainly poor and shanty areas) depends on uncovered wells, streams and rivers. Again, while it was found out that almost every household in the in the rich areas have at least a regular flowing pipe borne water, about 30 or more compound houses depends on a well or periodic flow public pipe borne water and to a large extent on streams or rivers in the poor areas. As one respondent from one of the poor communities (Tafo) puts it “Adequate water occurs periodically when every pot in the house is filled water and when one does not fear using it and water is scarce when you see the women hiding bits in rooms so as to ration it.” Again the quality of water is also seen or determined by “the colour, such that clean water is clear or slightly whitish while dirty or unsafe water is almost red”. To many, water is scarce when one sees women and children with buckets travelling long distance, spending hours to the source. This above piece sums up the views of the venerable in city of Kumasi.

4.2 Water and quality

The concept of water quality is differing as to the intended use of water. It is obvious that drinking water should meet other requirements than water for other uses. Generally, water quality refers to the attributes or characteristics of water: good or bad / safe or unsafe and this relate to its acceptability for certain purposes or uses (Lamb, 1985). From scientific point of view, those attributes are usually defined in terms of appropriate physical, chemical and biological parameters. For this study, no analysis or measurement of water was performed in the study area, however, the physical environmental conditions and hygiene of the sources of water and the incidence of water related diseases in the study area was used to determine the quality of water.

4.3 Water supply and sources of water in the study area

It was very difficult getting the number of the sources of water in the whole metropolis, although, the different sources were easily established. Preliminary survey of sources of water used in the various suburbs revealed a varied type between the various communities depending on the area concern: the quality, the season and the ability to pay. The main source was identified as follows: Pipe water from the GWC, bore holes, wells, streams and rain harvests.

4.3.1 Ghana water company- Kumasi

The Kumasi Metropolis receives water from two pumping stations. One at Barikese which is able to pump 15 million a day and one at Akropong (Wabre) where 6-7 million gallon used to be
pumped. The metropolis used to receive about 21 million gallons of water a day but presently that quantity of water supply is not recorded due mainly to power fluctuation. It was revealed that presently, water distribution is between 17-18 million gallons of water from both stations. However, it was made known that if there were stable power and good machines the stations could pump up to 51 million gallons a day. A resource person at the company gave a rough estimate of 120 gallon a day as the ideal figure to supply water to many (not all). According to him, plans for the future, focuses on the World Bank and the Dutch Government agreement to donate some amount of money (not known) to upgrade the plants. Parts of the company’s plan for the future includes, introducing the mechanised (dug well with machines fitted to pump water into tanks which will later be distributed) to supplement the water from Akropong and Barekese. The company is no longer building any new pipe line especially to new and emerging areas of the city. He also admitted that water does not flow in most of the existing pipes. He mentioned specifically areas such as Santasi Atasemanso, Kotei Deduako, Asokore Manpong, Adiembra, Buokrom, Pankrono, Ahwiaa as mostly affected. However, residential areas in southern Kumasi often receive about 70 percent of the total water supply in the city according to him, while sometimes, areas known to enjoy regular flow are often shut in order to allow some other places to have water supply. In an attempt to find out why some areas enjoy their services fully while others don’t, he only enumerated the problems facing the company as follows:

- Lack of capital to expand production
- Obsolete equipments
- Encroachment of private developers in the catchments area
- Reduction of water from the main streams feeding the company
- Pollution mainly from agricultural practices in and around the catchments
- Urbanization with housing mostly in authorized areas
- Population growth
- Emergence of industries which relay mostly on water
- Linkages in the system
- Metering
- Power fluctuation
With the increasingly rising population in Kumasi and sitting of factories, all the factors need to be looked at wholesomely.

**4.3.2 Bore holes and wells**

It was difficult to know the actual number of bore holes and wells in the metropolis. It was not clear which institution was in charge. Although the GWSC is officially mandated to oversee bore hole and wells in coordination of the KMA through the committees of Development planning and Environmental and Health, however, it appears that the institution had lost torch of its function. This is because the citizens prefer going for private manual labour which is usually cheaper to pay. A resource person from GWC said averagely, it costs about 25 million cedis ($2500) per hand pump borehole which is normally dug to at least 25 feet deep and 200mm in diameter, and are likely to have a transducer installed to monitor the rise and fall of water levels and the health inspectors always make sure it is at least 50 meters from any septic tank. He said, however that, the manual private labour only dig to wait for water, it means that it can even be 10 ft if only water comes they are satisfied. He said occasional random checks by the health inspectors normally reveal serious contaminations because the environment is usually not taken into consideration. However, he admitted they have not monitored effectively because the owners will continue to rely on it since there is no other source.

Fig. 4.2 Picture shows encroachment of private developers in the catchment area
4.3.3 Rain harvest

Water harvesting has been an ancient technique for enjoying what the locals called pure water, free from impurities and considered as soft with little cost in the study area. Collecting rainwater for use during dry months in rain seasons is seen as an ancient and traditional practice. Historical records show that rainwater was collected in simple clay containers (GWSP, 1991) and this has existed with probably a little innovative roofing sheet method where personal observations by the researcher reveals continued dependence in almost every household although there could be other main sources. The observed and reported problems associated with this source is that, there has not been any innovation since it is still been considered as a supplementary source. Most of the roofs are rotten with little reservoir to store enough water for use during the rain season. Again, urbanization with its associated problems such as pollution has made rain water to loose it purity since the people do not treat such water before use which makes it contaminated with serious health implications. Uncontrolled emissions from a growing number industries and exhaust of many old vehicles have increased the levels of pollutant in the metropolis with a variety of toxic chemicals such as platinum and palladium and lead.

4.3.4 Streams

Springs, streams and rivers are the traditional source of drinking water for most people especially the unfortunate poor who live in slums and informal areas. It was revealed during an interview granted by a committee leader that most people choose to live close to the banks of these streams so as to have easy access to water.
The most unsafe water source in the study area seems to be this source. Almost all industries are located along this network and it is the main dumping place for these industries. It is also an eyesore to see people who reside along these sources using it as their dumping site for domestic waste, discharges from a septic tank also occur openly here. Also, upstream sewage discharge is seen openly in Kaase and Asago. Industrial waste, including assortment of chemicals and oils from informal motor repair businesses, sawmills found along the Daban, Sisa and Oda rivers as well as brewing and waste from the main city abattoir located along the Subin River could be the worst form of pollution for the streams. Apart from the people who live close to this source, it still remains an important source to the whole city as it is used for washing and swimming. However, the people were aware of the growing levels of pollution in the rivers and they claimed to have stopped drinking from them, though they still use the water for washing. There is still
doubt, as one unit committee member said that there had been series of education on radio as it was aired that most people suffers from dysentery, cholera and bilharzias especially children due to poor hygiene. It was observed that consumers compete with animals for this source of water.

4.3.5 Water vending

Water vending is gradually becoming the main source of drinking water for the brisk business city centre since it provides both employment and income for many urban dwellers. There are no clear and consistent policies and regulations on this form of trade; therefore it remains one of the easiest forms of trade which does not require any skill or much capital to enter. The city centre is therefore packed with all forms of people selling water either in a plastic bag water or direct fetching of water from a bowl of water with some few cups to consumers. The later is dangerous since consumers rotate in terms from the same cups without any form of cleaning. Incidentally, it is interesting to note that personal observation by the researcher reveals that majority of these vendors are rather poor women and children from slums and shanty areas, who themselves lack adequate safe water. The few people the researcher talked to acknowledge the health risk they put themselves by drinking from such source. Some of them said however, they prefer the local plastic packed water since they believe it is much safer but majority relies on the rotational fetching cup form since it is relatively far cheaper. It was also not clear to them about the sources of such waters. A visit to six such so called companies showed similar pattern and among the six visited the most hygienic one was the one situated in Santasi, where only two people own and work. They were seen doing the packaging in a room with bare hands without gloves, wearing shoes and walking with it on the same floor where the final products lies. To them, the most important thing is packaging and they believe it to determine sales.

Fig. 4.5 Shows men at work in a private water distillation site
Pipe borne tap in the yard and a supplementary source from a nearby public tap water were identified by them as their sources of water with “Sieving” as the only form of treatment.

4.5 Sanitation

Although, the focus of this study was not sanitation, a review of a study done on excreta disposal system by Whittington et al. (2003), shows that about 40 percent of the populace rely on 400 public latrines scattered throughout the city. 25 percent have access to WCs, another 25 percent also uses bucket latrines which is in their buildings and 5 percent uses pit latrines. The rest go to what is popularly called “free range” or “no man’s land”. It is interesting to note that these are distributed based on the area (suburb) and the status of people in the said area. The study shows that the WCs were located in residential areas and governmental institutions where water flows regularly and the WCs are connected to sewer. The public latrines serve the most populated city centre where people are seen waiting for their turns with a little user-fee charge per head. It is supposed to be emptied regularly by the KMA, however, some overflow frequently. There is none connected with water and users move to and fro without any form of washing. The bucket latrines present the heaviest health risk in relation to drinking water. Private cleaners (only empty the bucket) are engaged and since there is not any centrally organised disposal system in the metropolis, most of these cleaners empty the bucket directly in neared by streams and rivers.

Selected observations on waste disposal such as domestic, commercial, poultry and industrial waste show that, the metropolitan assembly has waste management as its first priority and there are clear organized systems with the provision of resources, monitoring and regulation services. Yet, the assembly is not able to coordinate and operate fully, which to a resource person from the assembly (Owusu- Appiah Pers.Comm.) is due to the growth of the city and therefore there is rise in cost of operation, maintenance and monitoring which the assembly can not bear. It was seen that while some suburbs has communal container system which does not attract any fee, there are also household container systems in most formal settlements which attract some fee. Again, in shanty and informal settlements there are no such systems, domestic waste are seen being dumped in unoccupied lands, fields, streams and drains.

4.6 Water, Sanitation and health in the study area

The above description of the sources of water in the metropolis, management practices, as well as the relationships between drinking water sources and the socio-economic activities of the people sums up the health risks and situation for the people in the past, present and the potential one in the future. Although, population increase may be a factor, the fact that over 90 percent of all cases occur in the northern poor areas (pers com.) yearly, clearly shows a good relationship between water source and health.

This study dealt with water/sanitation related diseases but focused and concentrated on drinking water. These include guinea worm, onchocerciasis, schistosomiasis (bilharzias) dysentery, diarrhoea, typhoid fever and cholera. As a poor region with much believe in traditional and orthodox medicine, it is believed that the figures mentioned here do not really give the full picture of the health risk and diseases (cases) in the city as citizens have the right to choose the form of medicine they believed. However, considering the health policy of the country as a whole
NHS), it is expected that majority relies on hospitals, and therefore the figures gives adequate reflection of the health situation in the city.

There is much to say in broader perspective in terms of water related diseases in the study area. (Refer to tables and the figs.). According to Kumasi Metropolitan health report (2006), malaria alone constituted 44 per cent of out-patient cases in 2005 and this figure doesn’t seem to be dropping in the year 2006 considering the fact that the first quarters admissions was higher as compared to last years figure of 4373 and 6015 respectively. The rapidity of water shortage explains the rapid increases in typhoid fever cases recorded in the metropolis. In 2001, there were 377 cases, this rose sharply to 1061 in 2002, the figure rose again to 2040 in 2003 and more than doubled in 2003 to 4429. At the end of 2005, 5348 cases were recorded. Cholera which used to be non-existing during the years between 2001 and 2004 suddenly recorded 1621 cases in 2002. Among all these diseases, diarrhoea cases seem to be the major problem in the study area and it has taken the life of many, particularly children. Records from the regional health services gave different forms of diarrhoeas cases in the metropolis; it ranges from diarrhoea with no hydration, diarrhoea with severe dehydration to dysentery and it is one of the most common drinking water health problems in Kumasi. While dysentery seems to be decreasing with the following figures: 18070, 17853, 575, 3273, and 1213 in 2000, 2001, 2002, 2003, 2004 and 2005 respectively, the same cannot be said about diarrhoea with no hydration. In 2003, 7633 cases were recorded, it increased in 2004 to as mush as 17551 and again shot up to 20749 in 2005. Guinea worm, initially know to only exist in the rural Ghana has also started emerging though with cases below 10 yearly. One other disturbing diseases is Onchocerciasis which features prominently yearly, with a singly figure in the year 2003, the diseases rouse to 393 in 2004. Bilharzias is one of the diseases catching up with the youth in the area, according the reports, while the in 2001 the reported cases were 149, it decreases to 114 and reduces again in 2003 to 77, however, increased sharply in 2004 to 2452 and in 2005 197 cases were recorded. It was noted that out of all these cases, the addresses shows that 90 percent is coming from the poor living in slums and shanty areas of the city. Population increase forms insignificant factor in explaining the situation since information from the Ghana statistical services (2002) puts the city’s annual population growth to 3.4 percent (KMHR, 2006)

A source from the metropolitan health directory had this last words; “So far as water source receive inadequate protection and ineffective treatment, and so far as water source continues to be contaminated by human and animals, there is the potential future out break of many of intestinal and other infectious diseases in the city can not be ruled out”
Table 4.1: Drinking water related diseases in the study area

<table>
<thead>
<tr>
<th>DISEASES</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>TYPHOID FEVER</td>
<td>377</td>
<td>1061</td>
<td>2040</td>
<td>4429</td>
<td>5348</td>
</tr>
<tr>
<td>CHOLERA</td>
<td>15</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1621</td>
</tr>
<tr>
<td>DIARRHOEA WITH NO DEHYDRATION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7633</td>
</tr>
<tr>
<td>DIARRHOEA WITH SOME DEHYDRATION</td>
<td></td>
<td></td>
<td></td>
<td>3510</td>
<td>3625</td>
</tr>
<tr>
<td>DIARRHOEA WITH SEVERE DEHYDRATION</td>
<td></td>
<td></td>
<td></td>
<td>1443</td>
<td>894</td>
</tr>
<tr>
<td>DIARRHOEA WITH BLOOD (DYSENTERY)</td>
<td>18070</td>
<td>17853</td>
<td>575</td>
<td>3273</td>
<td>1213</td>
</tr>
<tr>
<td>URINARY SCHISTOSOMIASIS (Bilharzia)</td>
<td>149</td>
<td>114</td>
<td>77</td>
<td>2452</td>
<td>197</td>
</tr>
<tr>
<td>GUINEA WORM</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>ONCHOCERCIASIS</td>
<td>48</td>
<td>10</td>
<td>1</td>
<td>393</td>
<td>44</td>
</tr>
</tbody>
</table>

Fig 4.6 shows the graph of nine water related diseases in the study area.
From observations, it was clear that the public taps found in the northern poor communities were between 2km to 3km apart and most of these had several leakages explaining none functioning of these taps. In two of such supply points, consumers had to wake up during the nights to wait for an hour to six hours for their turn.
CHAPTER FIVE

Results
Responses on water management

To access the knowledge and the potential of water management based on community participation, it is important and necessary to link it with how the people think about the present system in relation to provision of adequate safe drinking water.

5.1 Socio-Demographic information

Majority (41 percent) of the 100 respondent interviewed were 45 years and above. 33 percent were in the age group of 30 – 44 years consisting of the second majority, while 26 were in the age group 18 – 29 years constituting the minority. 60 percent of the respondents were females whilst 40 percent were males. 68 percent resides in poor/shanty areas in the north of the city with 38 either in residential or private rich homes in the south. 35 percent were self employed, 28 percent are government employed and 15 percent are private employed. 9 percent are students and 13 percent are unemployed. Most of the self employed were petty traders and farmers. 22 percent did not have any formal education. Majority (56 percent) however had education up to the basic level and 22 percent had education up to the tertiary level.

5.2 Responses on the various sources of water as drinking water by respondents.

The pattern of responding to the above question presupposes the residences of the respondent. There were varied responses to the question of the use of these sources, 28 percent said they depend on pipe borne water and it was shown in the response in the questionnaire that almost all resides in residential areas, rich private homes or old suburb in the city centre. Most of the 10 percent who said their source of drinking water is streams/rivers in the city also live along this source while about 24 percent drinks from borehole. It is the only source found in both the poor and the rich communities although predominant in rich communities. 15 percent depend on well, 4 percent on vendor services whilst only 1 percent depends on rain harvest. 18 respondents said they depend on two or more of these sources.

Table 5.1: Household drinking water sources in the metropolis

<table>
<thead>
<tr>
<th>Sources of drinking water in the metropolis</th>
<th>Percentage use of drinking water source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipe borne water</td>
<td>28</td>
</tr>
<tr>
<td>Streams</td>
<td>10</td>
</tr>
<tr>
<td>Bore holes</td>
<td>24</td>
</tr>
<tr>
<td>Wells</td>
<td>15</td>
</tr>
<tr>
<td>Vendors</td>
<td>4</td>
</tr>
<tr>
<td>Rain harvest</td>
<td>1</td>
</tr>
<tr>
<td>Others (two or more)</td>
<td>18</td>
</tr>
</tbody>
</table>
5.3 Attitudes about existing drinking water sources

Respondents were asked to rank the sources of drinking in the city in terms of cleanliness, adequacy, and conveniences. As can be seen in the table below, 100 percent ranked pipe borne water as the cleanest, 15 percent said streams are the cleanest. One respondent when asked why, had this to say “A stream is always moving, a dirty site is replaced immediately by water”. 90 percent also said boreholes is equally clean; they believe that machine drilled bole hole gives them the best since the water is sieved by the soil. Well and vendor had 5 percent each but without any reasons. 15 percent said however that, it is rainwater, as they see it as “water from God”.

65 percent acknowledges the fact that the city has a lot of streams to provide water. 5 percent get adequate water from the pipe borne water while 10 percent rely on boreholes in their community. 10 percent use water from vendors, 5 percent each relays on wells and rain (rain harvest).

Table 5.2: Percentages ranking of drinking water sources

<table>
<thead>
<tr>
<th>Drinking water Sources</th>
<th>Cleanliness</th>
<th>Adequate</th>
<th>Conveniences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipe borne water</td>
<td>100</td>
<td>5</td>
<td>35</td>
</tr>
<tr>
<td>Streams</td>
<td>15</td>
<td>65</td>
<td>5</td>
</tr>
<tr>
<td>Bore holes</td>
<td>90</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td>Wells</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Vendors</td>
<td>5</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Rain</td>
<td>15</td>
<td>5</td>
<td>15</td>
</tr>
</tbody>
</table>

35 percent said pipe borne water is very convenient, while some argue that they waste a lot of time waiting for their turns in public pipe that do not even flow regularly. 5 percent said streams were less time consuming and do not involve much. 25 percent said bole holes located close to residents are preferred while 5 accepted that wells can easily be constructed within a good range to serve people with less cost. 10 percent preferred vender services; while the same percentage also said that rain harvest can serve households for the whole year if proper attention is given to it.

5.4 Rating of the exiting water managers in the city

Table 5.3: percentage rating of water management in the city

<table>
<thead>
<tr>
<th>Institutions</th>
<th>Poor</th>
<th>Fair</th>
<th>Good</th>
</tr>
</thead>
<tbody>
<tr>
<td>GWSC</td>
<td>70</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>NGOs</td>
<td>5</td>
<td>40</td>
<td>55</td>
</tr>
<tr>
<td>Private (individuals)</td>
<td>70</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Private (companies)</td>
<td>40</td>
<td>30</td>
<td>20</td>
</tr>
</tbody>
</table>
From the table above, it can be seen that 70 percent of the respondents rated the GWSC as poor managers. 20 percent gave them fair, while only 10 percent gave them good. It was revealed that, this was probably because of the composition of the respondents as about 15 percent of them reside in areas which receive almost continuous water from the GWSC. Although, nongovernmental organizations form insignificant percentage in the provision of safe water in the metropolitan (as they exist mainly in the rural areas), as many as 55 percent gave them the best managers. This could be probably because they hear much about them on the mass media or they are only tired with the others. Private individuals also had their own share. 70 percent respondents see them as poor as well. It seems that they are better known than all the drinking water providers as they operate in every part of the city. They received 15 percent as both fair and good. 40 percent of the respondents also saw the private (companies) management as poor, while 30 percent and 20 percent gave them fair and poor respectively.

5.5 What are the possible reasons why water is not being managed to fully serve the city?

This was an open-ended question; the respondent were not guided/prompted with possible reasons or answers, but the consistencies and similarities of the answers gave a good indication that almost all do understand the problem and the issue being discussed.

Apart from employees from GWC, the systematic relationships between respondents’ answers and the mode of answering this question (some in angry mode) sums up the desire for a more improved option of water management in the city.

Mismanagement was an answer that was heard from 95 percent of the respondents. When they were probed further, most of them poured their anger on the GWSC. It was believed by most that the GWC is only serving the residential areas and areas where they “personally get some “kola” (bribe) and thus, they are inefficient. However the spokes person of the GWC did not agree on this when the question was raised during the interview with him. Again, it was said generally that apart from the NGOs who are committed to their programmes and usually employ and use local residents in all their endeavours, private individuals and companies only seeks their own interest first (profit oriented), hence, do not operate in poor areas of the city where people cannot afford to pay.

The next important answer which runs through 60 percent of the responses was what some called “Overburden of women with household issues including water provision “, it was agreed by many that the issue of provision of adequate safe drinking water has been delegated completely to women, and men really do not care how water gets to the house. And to some, especially, the community leaders, there is little to say during meetings either with the presiding leaders who represent them in the metropolis or with the members of parliament because women leaders are less than 5 percent in local government in the city. When they were asked why, the response was that “women are traditionally meant to keep the house going”, said one community leader.

Apart from the above, the following runs through 50 percent of the answers; lack of capital, lack of education especially health education for consumers, scarcity of efficient local leaders. A few also mentioned others such as ignorance of the city by the subsequent governments, urbanization, pollution by emerging industries and modern agricultural practices, lack of monitoring by the
City’s metropolitan assembly, lack of proper waste management system, lack of proper rules and regulations regarding to planning and housing in the city.

A source at the metropolitan assembly acknowledges all the above but added quickly that the citizens hold the answer to the problem. The major problem hampering the assembly to him is sanitation and waste management in the city. He went further to say that the emergence of many informal settlers and the weak financial position of the assembly is also a big limitation. He revealed that most of the citizens are not prepared to pay any form of tax because they believe the money might not be used in their interest and the District Assemblies' Common Fund (DACF) is not enough to solve the entire problem. He said that the assembly needs more scientific method of handling and treating liquid waste in the city, and also emphasized that huge amounts of waste have proven to be an enormous logistical nightmare and financial drain on the assembly. However, getting the answer to waste disposal will help to facilitate the quest to provide adequate safe water to all. He assured the assembly would involve the citizens in introducing the house-to-house refuse collection scheme and the decongesting of the whole city of unauthorized structures. He was however quiet when asked, “What about water?” Probably, because the assembly seems to supports the government bid to privatized urban water.

Nevertheless, he said the assembly is hoping to take complete charge of health education so that the district medical health officer will report directly to the metropolitan chief executive instead of the national officer.

5.6 Knowledge of community participation in water management

When the question of the knowledge of community participation was introduced to the respondents, majority seems to have knowledge about it. 70 percent said they know about it, and it was further revealed that some had involved themselves in one way or the other in their previous station but mainly in the rural parts of the region and other parts of the countryside. Most of them said they had been involved in full community participation especially in the rural areas cleaning exercises. Some others choose to called it “community mobilization”, where they said, the rural community will come together to undertake common project such as farming, cleaning, celebrations or raising of funds for common purposes etc. It was an interesting question to almost all the respondents, as some happily said: in all those cases, whatever they meant to achieve was done perfectly. When asked why they think it worked to perfection in cases they mentioned earlier, their responses were that it was as a result of “unity, trust, devotion and the feeling of belongingness” of the initiatives. The other 30 percent (mostly the youth) also said they have heard about it but do not know the principals behind its operations and were wondering how it will work in a city like Kumasi.

An interesting answer was given by an elderly respondent (76 years) who reside in one of the poor communities. He smiled remembering the dead wife and said, “Those were the days when my wife together with her friends cook, sing and sweep whilst the other men and I weed and carry heavy stumps in the village of Essumeja, some 50 years ago”. This answer was common among the elderly respondents in the poor communities and showed that the concept has been with the people for so many years now but probably in different form and gave good illustration on how women and men combined effectively to help the community. It was revealed from the
data that the 70 percent who acknowledge the full knowledge of community participation in water management is made up of illiterates and literates living in both poor and residential areas.

**Fig 5.1 shows the percentages knowledge of community participation in water management by respondents**

![Bar chart showing percentages of knowledge]

5.7 Preference and willingness of the communities’ (suburbs) to participate fully in water management in the city.

The last question was whether they think that, involving the citizens to manage their own water will be help to provide adequate safe water for the city? If yes, how do you think it can work?

In their response, about 80 percent of the respondent agreed that the communities should be involved in managing water in the city, however, not all of them agreed on the extent at which the communities should be involved. It was also found in the data that those who did not agree were mainly pro-government respondents who still believe that the government bid to privatise water is the best for the city. Nevertheless, they did not support full international private take over since they believed the cost of water will be so high that the ordinary people may not have access to safe water after all. On the other hand, those who said full community participation might be the answer were made up of the ordinary citizens, as well as the community leaders. Some of the reasons in support of full community participation are quoted below.

Five quotations were selected, and if those words can be backed by actions it can be argued that most are prepared to go all length to provide adequate safe drinking water to their people. Reason such as “we know what is good for us, why do you think that we will not give ourselves the best”, “it doesn’t only take money to built borehole for the people, we will use our strength, and even if it is money” “I know we can measure up to standard”. These came from the poor in shanty areas. A committee leader had this to say: “who said this cannot not be done in the city. Look, this city based on traditional and political structure is blessed with leaders. Apart from the normal local government structure revolving around the metropolitan, the city has 4 sub metro with more than 33 suburbs with various intermediate tier councils and unit committees, we are responsible, we raise money and we account to the people, why can’t we provide and manage our own water”. An NGO member also said: “we have been with the people, we know how important it is for them to provide their own welfare, and you need to see how people come out to support us in the few rural areas that we have been to. I think Ghanaians in general will always like to support”. A woman who resides in one of the poor areas felt motivated by the question, and said: “managing our own water will be wonderful; we are always weak struggling for hours for water
to manage the house. If the men will support with all their strength, then we can surely do it.” The woman’s words sums and ended it all. Why then is the community not involved if 80 percent supports it? The answer was seen from the other 20 percent respondents who do not think that community participation is the answer. It was found out that most of them who are in this category were politicians who either belong already to the highest decision makers’ in the city (metropolitan assembly) or have other interest considering their background.
CHAPTER 6
State-of-the-art

Water-related diseases are a human tragedy, resulting in millions of deaths each year, preventing millions more from leading healthy lives, and undermining development efforts by burdening the society with substantial socio-economic costs. This problem is of great significance in cities in developing countries, where polluted water, water shortages, and unsanitary living conditions prevail. Despite the clear importance of water for human health and welfare, basic water needs are not met for many people in the world. It is increasing seen from the world over the years that the major issues about urbanization and water quality is management (Lenntech, 2005). Indeed, many people hold the view that this issue of water quality in urban centres particularly in Africa is a prime concern for all around the world, there are therefore many old as well as modern sources dedicated to this topic. The Millennium Development Goals (MDGs) which were agreed to by the international community at the UN Summit in 2000 is among some of the international policies to reduce by halve in 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation( WHO, 2004). As this target date approach, the need to monitor progress toward achieving them has been widely acknowledged and numerous initiatives are under way. Billions of dollars have been spent in the developing countries for improving community water supply, and there have been many concepts and approaches toward this goal, among these are the concept of community participation (WHO, 2004).

6.1 Community participation

In this section, the concept of community participation is looked at with its pros and cons. The concept as it is used in rural Ghana is also looked at, and finally, some selected case studies are presented to show:

- The importance of bottom-up approach,
- How the problem of trust among partners can be dealt with especially with regard to the use of funds
- The importance of involvement of the community in all process and stages of projects
- The importance of defining roles of stakeholders including women

6.2 The concept of communication participation

The Oxford English dictionary defined community and participation as:

a) Community – “A body of people organized in to political, municipal, or social unity”, “A body of persons living together, and practising community goods”, “Common character, agreement and identity”

b) Participation – “The action or fact of partaking, having or forming part of”, “The fact or condition of sharing in common (with others, or with each other); partnership, fellowship, profit sharing” (Onion, 1975).

The concept is defined by the United Nations as “the creation of opportunities to enable all members of a community to actively contribute to and influence the development process and to share equitably the fruits of development” - It is the functional control of systems where by individuals in communities or their representatives partake an act purposed to benefit the entire
community which may include elements of community ownership or partnership with greater involvement in day to day operation and maintenance of the said project (UN: Neguisse, 2001).

It is generally seen as a common platform where people can actively participate in all decisions affecting their daily lives by either contributing or influence any process in order to enjoy the results finally. There are many examples around the world to show that in situations where all basic institutions are provided, the resultant solution is always among the best probable. It must however be emphasized that the application of the concept varies in the level of participation and stages at different levels and areas depending on the back ground. According to Schuringa (1998), the system may create good platform for demand based community water supply development, the use of local / community based knowledge, full involvement of the community, enhancing cost recovery, it also improves community management capacity as well as increases community awareness and confidence. Nevertheless, the writer also found some disadvantages often associated with some projects such as mistrust between the communities and the supporting external agencies, the neglect of women in planning and implementations of projects, as well as the ineffectiveness of the locals in sustaining projects and overdependence of external support.

6.3 The concept of community water and sanitation programme in rural Ghana

The concept of community participation has existed in Ghana as a national rural programme since 1995 to improve water supply, sanitation and health. The concept was born into being after a dialogue between the government, funding agencies, service providers, and users, taking as a starting point the New Delhi Declaration on Water Supply and Sanitation and this led to a national workshop in Accra, Ghana in 1991 (CWSPI, 1999). The major objectives after the brainstorming were as follows.

- Provision of basic water and sanitation services to communities that will contribute towards the capital cost and pay the normal operations, maintenance and repair costs of their facilities.
- Ensuring sustainability of these facilities through community ownership and management, community decision –making in their design and active involvement of women at all stages of individual projects.
- Promotion of efficiency, cost-effective and sustainable delivery of improved water supply and sanitation facilities through private sector provision of goods and services, public sector promotion and support.
- Maximization of health benefits by integrating water, sanitation and hygienic education interventions, including the establishment of hygiene education and latrine construction capabilities at the village level.

It must be emphasized that this programme focused both on water provision and basic sanitation in the rural Ghana and this was differentiated from the urban water management where the GWSC was supposed to be in charge.

6.3.1 Institutional structure

(a) Community level
Communities are supposed to participate in the planning, design, construction and maintenance of water and sanitation facilities to be provided by the state.

(b) Community contributions to capital
Communities’ contribution to capital formation was supposed to form part of the initial conditions for the provision for the projects.

(c) Committees
There were supposed to be committees responsible in planning and managing the facility at the local level which was known as water and sanitation committee (WATSAN). This committee was to represent the communities in the district meetings because the district assembly which is a political organ of the government was supposed to be in charge. This did not work well mainly because of trust. The communities were reluctant to give cash in return for promises of new water supply, and the government was also reluctant to invest time and money if the communities were themselves not committed. Little consultations were done and all shareholders were not identified to play a role. Another lesson learnt from here is the inability of the government to realise that they were dealing with people who had lots of limitations in terms of status-income, education, beliefs, culture etc. The report further identified the following as the major causes of the programme” failure:

- Lack of proper consultation at the community level in planning and implementation of the programme.
- Lack of trust among partners
- Over reliance of external personal in the execution of the project
- The neglect of women in all stages of the programme
- Lack of education and knowledge of the consumers
- The importance of defining roles of stakeholders including women
- Lack of commitment among the stakeholders. (CWSPI, Manual, 1995)

6.4 Selected cases of community participation on water management

The issue of power and control was the core issue of community participation in water supply in South Africa in the early years of its insertion. Although, communities were naturally participating, the idea that external agency particularly the donors know best and can therefore provide good management with financial skills to provide accountability renders the communities powerless and brought onto them the realisation that they are incapable contributing whole handsomely towards their own welfare. Community participation was only regarded as a “component”, but the real management was in the hands of an external facilitator who knew little of the community and thus not aimed at building the capacity of communities to manage their own development. These negative experiences motivated the birth of “Community-driven development” where the community contributes largely to funding so as to have to manage their own development by controlling all activities including finances thus ensuring project sustainability and viability and bringing the sense of commitment and ownership. However, the fact that basic funding continuously came from either the government or a donor with the provision of a facilitator who is believed to have either the technical know-how or administrative skills to initiate or facilitate projects led them taking more leadership roles. The writer maintained
that the provision of a facilitator and funding alone is not sufficient to sustain any project (Simanowitz, 1997).

A research by Mtinda (2006) on four community project in Tanzania (Nguyami, Dumila, Mlali and Mkoka), shows that communities contributed cash and provided labour. The main item for these projects was cost recovery. The study shows that the operation and maintenance of these projects were in the hands of private people and most often external agency and this led to lack of commitment on the part of community leaders. Community leaders were thus, not motivated to create much awareness since transparency on the part of management Committees in relation to income and expenditure as against money accrued from water sales was not known by them. In addition to this, with special reference to Nguyami, while some consumers paid fully for services, some elites (elderly) were made to enjoy free services and this was a major drawback.

Involvement of the community in all process and stages of projects is a key issue in the whole concept of community participation. Research presented in UMP-Occasional paper (1996), proved the vital point in real community involvement. According to this paper, between 1981 and 1988 the Ministry of Interior in Brazil financed projects in most peri-urban areas in Brazil to increase coverage of the poor for improved water supply and sanitation. But with time it was observed that, while water supply improved over the years, sanitation services which were neglected were deteriorating. It further worsened the water situation. Further research revealed that, the technology and occurrence of animals at the water used was not suitable for the low income communities. Again, the communities were not involved in the maintenance and had no hand in providing any other services. These findings, according to the researcher led to another pilot project called “The Prosannear”. This was meant to provide water supply to a population of 200,000, and improved sanitation to a population of 700,000 in low income urban settlement between 1992 and 1996. This project was financed by the government of Brazil, the World Bank and the municipal local government. The main method here was participatory approach involving a dynamic process of interaction with the community and there was a clear definition of the rights and responsibilities of all the parties and stakeholders. There was a strong Partnership involving individuals in the communities as well as public and private water companies and government.

These projects focused on slum and informal areas, where low cost engineering techniques were used to build basic sanitation systems for the poor. The communities were consulted and made to involve in the design and construction of water and sanitation infrastructures after they were engaged in discussion and education. Again community participation and hygiene education was defined with rights and responsibilities of local residents and this worked well with the people holding on to their rights and sustaining the projects emphasizing on bottom up (UMP, 1996). However, a paper released by IRC – International water and sanitation centre (25 August, 2006) gave some limitations on over relaying of the community in a study in Tanzania. This study which was done by Uchia Water Users Association had a lot of questions on the effectiveness of the local communities, as it appeared that the elites in the community had their interest dominating the interest of the entire community. They were able to influence the location of projects (preference of certain spots), and they had the right to enjoy free services to the detriment of the poor. This led to weak commitment from all. The paper further suggested that defining roles of all stakeholders might help to limit this problem.
In a related development, the problem of trust was removed in Ethiopia where community development fund was introduced. This resulted in Successful Rural Water Supply and Environmental Programme in Amhara Region. According to the IRC, the CDF projects remove the aspect of direct funding, where the system of procurement was put in place. The system known as “WATSANCOs” (community water and sanitation management body) had a channel through which funds are released. The community development fund was given only by micro finance institution on demand from the community with support from Woreda (water resources development teams). This was regarded as a triangular partnership and was seen as more efficient than projects financing by direct fund support method as communities were able to implement their own projects as there was efficient flow of resources. There was no room for external agency alone to decide when and where to influence the use of funds. There were checks and balances among all partners since the line of fund flow was defined. The importance of this was seen in the increase of point source from about 25 percent per year in 1997 to an average of 54.6 percent in 1999. Communities were responsible for procurement through WATSANCO during the construction phase. Two different accounts were opened and all money coming out of this must be a request from the community. Money moves from RWSEP account to CDF Board account and there after to the specific water point account. All this is monitored by the community through their representatives. This gave them good sense of ownership and commitment, with the communities taking keen interest in all stages of various projects (IRC, 2006).

Fig 6.1 CDF fund disbursement process

First advance is sent to WATSANCO after the Funding Agreement is signed

WRDT Leader writes a letter of authorization to ACSI sub-branch that the signatories of the specific water point account are allowed to withdraw money from the water point account.

The delegated member of the community, whose name is mentioned in the authorization letter withdraws the money. Thereafter suppliers, contractors and/or artisans can be paid.

WATSANCO will come with next request of money by attaching the following documents:
- Fund transfer request
- WATSANCO account report
- Original receipts of the payments
- Payment certificates and other supporting documents

CDF supervisor receives the original receipts and signs on their backs, and gives to the WATSANCOs an acknowledge of receipts of accounts and a format filled and signed by him recording the amount of the value of receipts he has received from the WATSANCOs. CDF supervisor and WRDT Leader checks and approves the documents

WATSANCO CDF account is kept open until the retention money is paid. The left over money from construction is returned back to ACSI immediately after the construction is completed. The account will be closed when the retention is paid.

(IRC – International Water and Sanitation Centre report, 2006)
The RCI also reported of a case where women were drafted for slum upgrading in Tamil Nadu, India in a despair situation among as many as 155 slum areas that house 115000 people. The report said that latrines were built to serve the communities but it was poorly managed by the municipal water corporation and therefore the people choose to defecate in and near riverbanks and around the latrines. This led to poor maintenance and created very bad health problems leading to outbreak of water/sanitation related diseases including cholera and diarrhoea. An initiator, a local based NGO with the help of Water Aid international resorted to discuss and to use women self help groups to provide maintenance. Selected women were therefore put in charged of the programme. Maintenance fee was put in place to take care of cleaning materials, cleaners, and watchmen and with time the old latrines were maintained and new ones were built as well.

The women organised themselves to Sanitation and Hygiene Education groups after receiving basic training from the external agencies. They interned gave door to door education to the people on hygiene and the need to pay for services. Various teams (She Team) were formed comprising about 15 people with the leader being a woman in charged of a latrine each. Accounts were opened for each team where amount collected daily were sent to weekly. The “She team” hosted monthly meetings with the members to account for deposits and expenses, and further report during to she team meetings with the facilitators. This created good trust since there was greater transparency. The programme was sustained and more latrines were put up from the money accrued from the project. The women in this case did not only help the community but also benefited from the leadership roles by unearthing talents and this provided the platform for local technology to be used (IRC, 2006).
CHAPTER 7

This chapter discusses the results of the study in relation to the objectives of the study and the current literature on the topic, challenges and the way forward.

7.1 Water and health in the study area

It has been established from the study that the main sources of drinking water are Pipe water from the GWSC, bore holes, wells, streams/rivers and rain harvest. This however varies from community to community depending on varied reasons, which includes quality, the season and the ability to pay. But the most important factor is the location of the community (suburb) vis-à-vis the socio-economic statues of the people. The southern zone which includes government residential areas and private rich households uses 70 percent of the water supplied by the GWSC and most houses have at least one regular supply tap (GNWC, 2004). On the other hand, a visit to poor/shanty areas shows either one irregular flowing public pipe supplying over 40 households or none in very poor areas. Factors such as lack of capital to expand production, obsolete equipments, encroachment of private developers in the catchments area, reduction of water from the main streams feeding the company, pollution mainly from agricultural practices in and around the catchments, urbanization with housing mostly in authorized areas, population growth, emergence of industries which relay mostly on water, linkages in the system, metering and power fluctuation were seen as the main problem facing the government owned service providers.

Rain harvest seems to have lost its potential in the city since it was found out that pollution has made rain water to lose it purity and the people do not treat such water before use which makes it contaminated with serious health implications. Other factor including climate change has affected the reliability of rain water. In addition, there is no architectural idea among the poor as to how to harvest water since the kind of houses being built in these areas do not have any of such facilities. A machine drilled borehole seems the potential future source of adequate safe drinking water in the city since it was admitted by all to be safe. It was also the only source found in both the rich and the poor communities although few in the poor communities.

From all indications, unprotected wells are very unhealthy in the study area, yet the most unsafe source of drinking water in the area is streams and rivers. It is the dumping place for industries.

Responses on the drinking water source put many people at high risk in terms of health: refer to table 5.1. It is no wonder that reported cases of drinking water related cases kept rocketing in the study area. Although, it must be admitted that population increases can be a factor to this increase, 3.4 percent annual population growth rate can not measure the reported cases of typhoid fever and diarrhoea in the study area. There were similar increases in other cases of diarrhoea, guinea worm, cholera, bilharzias and onchocerciasis and considering the fact that as many as about 90 percent affected people resides in the northern poor / shanty areas strongly makes it easier to link the drinking water source to these cases. During the study, the respondents gave many reasons for the state of public drinking water in the city, among which includes capital, high cost of acquiring adequate safe drinking water, but the word “mismanagement” on the part of service provided especially GWSC, private companies and the metropolitan assembly was seen and heard from most of them. 70 percent of the responds said the GWSC as well as private managers were poor managers. This may be subjective and incorrect since their answers may be
influenced by their political affiliations, however, based on statistics of the study and the literature of the study, it important that a decision needs to be taken as to which option of management is appropriate.

7.2 Knowledge of community participation in water management

70 percent of the total number of respondents interviewed was found to have experienced some kind of community participation before the study. The fact that the communities still uses this in mobilizing people for exercises, such as cleaning means that in practice they understand the basic principle of community participation.

The 30 percent of the respondent who only admitted hearing about community participation were mostly the youth, who often do not involve themselves because of varied reasons. The quotations given in chapter five is a clear testimony that most of them are more than familiar with community participation. Nevertheless, this does not guarantee a comprehensive knowledge since in each case mobilization of the people for clean up exercise do not mean that people can be mobilized in the same way to achieve success. For example cleaning do not really needs contribution of money. In any case, mobilizing the people for clean up exercise can not be said to have achieved the aims of such goals. Part of the society is always dirty. But a committed society is capable of achieving a lot.

7.3 Willingness of the community to participation in managing their water

This seems to be the core issue of whether there is any potential of community participation, addressing the problem of the provision of adequate safe drinking water for the people. 80 percent of the respondents said the community should be involved while the 20 percent went for privatisation. One thing was also certain; none of the respondents supported international company taking over urban water in Ghana as the government is campaigning for. Respondents used all phrases to describe the energy in them in them to participate (Refer to 5.4). The fact that local institutions already exist create a good platform for more effective participation, couple with the fact that more women are lately engaged in politics and education. This has reduced the marginalization of women who could be principal actors in community participation. Study experience suggests that powerful sections of the community (politicians) dominate decision making. There is therefore a high tendency for political goals to supersede the real interest of the people.

Literature shows that there were two principal factors that hindered community participation in rural Ghana in 1995; Differentials between consumers and service provider/administrators, as well structural barriers. Influencing projects with political interest affects motivation to work and leads to lack of commitment of the people. Indications through responses from personnel from GWSC and the metropolitan assembly, shows fear that community participation will seek to empower marginalised sections of the community, especially the poor and the minority to challenge the power of government institutions.

A case in Tanzania (Uchira project), which was supported by GTZ, the German development agency was said to be unsuccessful, since it used the formal approach and was dominated by (elites) certain individuals and external agents. It therefore called in to question the perception
that local institutions are more effective. In any case, certain elites may be needed to play certain special role that the ordinary people can not do. For me, the key is to provide and ensure adequate policy framework back by adequate rules and regulations to ensure real commitment of both the community.

State – of the art of the study shows that there is the need for pre consultations as to address the issue of how to involve resourceful people in the projects as well as barriers to consumer participation. There is the need for the development guide for resource persons in developing a consumer focus in initiating policy framework for projects which will ensure a process of two-way exchange of information before projects are implemented.

Community participation should be decentralise in decision making with the government proving financial backing where the community should have a clear defined role in managing financial and other resources. This will ensure the commitment of the community and the stakeholders. What is certain from the study area is that to involve the community participation successfully; the community can not effectively participate if there is not a cordial relationship between the government, the community and service providers (representatives). Each needs to believe that there is value to be gained by engaging with each other. This is particularly important on the community side, especially where most of this service may be voluntary and can be maximised if only they believe that their participation will make a difference.

7.4 Hygienic living condition

Observation made revealed that almost all the different sources of drinking water had problems with sanitation and unhealthy living conditions. Figure 4 shows pictures of encroachment of private developers in the catchment’s area of the water company. Again, the situation where latrine buckets are emptied directly into the streams and rivers present a serious health risk. Housing continues to be a problem. Overcrowded, segregated areas with substandard, unsafe and unhygienic conditions, especially in informal areas results in continued pollution of water resources in the metropolis.

7.5 Community participation verses privatization

Among the various points for community participation in the literature is its ability to help in improving the quality of policies and services among diverse groups such as the study area in decision-making and service delivery, helping to build a sense of joint purpose, and increase the possibility of finding sustainable solutions. People develop confidence in agencies that invite participation and genuinely listen. And it encourages a participatory democracy in which everyone recognizes that they have a stake and a part to play. Another point for community participation is that people feel more powerful, more fairly treated and this help in the Collaboration with community and voluntary organizations which helps to improve monitoring and evaluation of community-delivered programs. Perhaps, the most important point is the fact it offers opportunities for government agencies to build a range of communication and cross-cultural skills among the poor and the rich that are applicable in many other settings. Nevertheless, the literature and many examples around the world have it that, services such as provision of water by the public/community is usually not sustain which is usually attributed to of lack of funds and lack of trust among many others.
Opponents of privatization claim water should remain a public good and not be commoditized since profit oriented private entities could not be entrusted with upholding the public good.

There are many examples around the world where the governments corrupted the act thereby creating further distrust among the citizens, Bailey (2005), cited Cochabamba, Bolivia to have witness such corruption in the bid to privatized water which resulted in a reduction of 10 percent of households connected to water system after privatization between 1989 and 1999. 99 percent of the wealthier neighborhoods were receiving water, while poorer suburbs had less than 4 percent connected.

It is no secret that many developing countries and poorer communities have rejected the idea of providing water for profit, nevertheless the rich countries including the big financial institutions are pushing them into a trade agreement, lobbied for by business and negotiated in secret regardless of the cost to the poor and the vulnerable.

Many developed countries however, have seen substantial gains with privatization, Gutierrez (2006) mentioned how the transfer of water and sanitation services since 1989 into private ownership have stimulated more efficient operations and much-needed investments in England and Wales.

Yet in many countries, especially developing countries, delivering it and keeping costs down is still a huge problem. It must however be mentioned that various researches have proven that profit making does not necessarily conflict with serving the poor, especially when it's regulated.

The debate will continue but these and many questions must be address before any conclusion is drawn: Are local communities ready for the private sector?, does the private sector understand its role in development and community participation?, is the community part of the problem or the solution etc?.

7.6 Challenges

Many epidemiological studies in developing world particularly Africa, primary link it with the unsafe water. This is why many international institutions such as the WHO, UNICEF and a host of others including governments are still seeking to improve the situation. Besides a few studies that have used community participation to improve health situation in Africa, many uncertainties still remain in making it more productive. It is therefore ideal that priorities should be placed on the following;

- Common understanding of the policy process
- Resources for projects
- Reliance on volunteers
- Access to information
• Identification of stakeholders
• Decision-making process.
• Relationship between government and rural communities
• Time and policy timeline restrictions

7.7 The way forward

For any form of community participation in water management to reduce threat of drinking diseases, there is need to approach it in an integrated way building partnership between stakeholders considering water and sanitation as well as housing to the socio-cultural background in the region. Water quality and sanitation monitoring programmes are an important basis upon which water management programmes should be developed. Water quality management should typically contain actions to improve regulations, support institutional frameworks and build capacities of decision makers. Several United Nations’ programmes provide a framework for implementation of a global water quality initiative through their international water monitoring, management and development programmes (WHO, 2004).

However these global guidelines seem not to be the only answer in solving the problem in the continent of Africa. The socio-cultural and economic settings of Africa demands that, much understanding, cooperation and economic backing is easily gotten if all stakeholders partake in the process of ensuring access of quality water and health.

7.7.1 Identification of stakeholders

Stakeholders should be identified and recognised in the communities as this will help them to influence and share control over development initiatives, and the decisions and resources which affect them. All the various local groups including the local chiefs, non governmental institutions, the municipal government, GWSC and the municipal health team as well as users of water for other purposes such as farming should share information about plans and schedules. Also, there should be avenue for discussions which allow them to suggest ideas and to make decisions based on mutual agreement. The current poor performance by the GWSC and potential benefits from participation is neither a panacea nor necessarily an end in itself as was seen in its earlier introduction in Ghana. Lessons should be taken from a situation where dominance of one stakeholder may destroy trust and commitment. Each should be guided by rules and responsibilities from agreement of initial consultations. It is very important in this city that certain group of people feels and behaves to be important than others based on either their royal lineage or political position. If conducted poorly, participation may even damage previously effective institutions and worsen the situation. The CDF project in Ethiopia is an example of how all stakeholders funded Rural Water Supply and Environmental Programme in Amhara Region achieved maximum success. This normally brings trust since every stakeholder believes they own the project and therefore takes part in all process.
7.7.2 Building trust

Many terminologies have been used to describe the various means of building trust among stakeholder. Such words include accountability, consultations, participation, community engagement, partnership and collaboration among a lot. Participatory approaches that share decision-making with the community clearly enhance ownership and motivate people to develop trust among stakes. However, politically, many African counties feels threatened when it comes into sharing power, yet this is what might ensure trust and in achieving sustainable development.

A document prepared by SGRDC (2006), had the following as the guiding principle of community participation:

- The community should have a say in decisions about actions that affect their lives
- The community is involved as early as possible in the community participation and decision-making process in order to build trust
- The involvement of those potentially affected is sought and participants are encouraged to assist in defining how they participate
- Participants are provided with the information they need to participate in a meaningful way
- Education and participation are directly combined whenever possible
- The needs and concerns of the public are listened to and their input is integrated into the outcome

In addition to the above, the regular interaction among stakeholders where issues are discussed and decisions are taken based on consent of local elected and appointed officials with key property owners, neighbourhood leaders, chamber and other economic development professionals, community service providers etc, is the key of ensuring trust which may help in ensuring and safeguarding the following if projects are to be sustain:

- Developing more definite links between the structure or methods used in participation and the purposes.
- Defining more carefully the roles of individuals within stakeholders,
- Improving communication, including such aspects as honesty and active listening,
- Recognizing that building trust and building relationships with individuals are vitally important, but take considerable time and effort,
- Improving language to enable all stakeholders to better understand documents,
- Developing training programs to build social capital for both stakeholders and policy makers
- Increasing awareness within projects of the value of community knowledge.

7.7.3 Fiscal backing

The academic literature and country experiences suggest that the people have always depended on the government for the provision of adequate safe drinking water and other social amenities in the country. Financing such capital investment through borrowing from rich and international institution has not been sufficient and efficient since such borrowing normally had to be shared
among many areas of national interest. Financial responsibility is a core component of community participation. If local government and the communities are to carry out projects effectively, they must have an adequate level of revenues—either raised locally or transferred from the central government—as well as the authority to make decisions about expenditures.

Governments have the primary role in promoting improved access to safe drinking water, basic sanitation and adequate shelter for the people. Challenges of urbanization, sanitation, and its effects on water quality have been a popular global topic with many guidelines year after year but little has been achieved especially in Ghana.

Many words at conferences, political platforms have been of no importance. What the communities really need is political actions as a leader, promoter, facilitator and financier in developing of norms and standards, provision of resources, piloting projects, and facilitating and monitoring of other units to motivate full community participation in drinking water is the could be a key to health problems in the city. International organizations including the financial institutions such as the World Bank insist on the provision of improve water quality for the people since to them, an improved water means healthy life which is the basic ingredient for economic growth and development. It approved $110 million structural adjustment loan for Ghana. This money was to help develop the water sector (Grusky, S. 2001). If such funds could be channelled to provide initial capital, then the communities could be Co-financing or co-production arrangements through which the users participate in providing services and infrastructure through monetary or labour contributions thereby expand local revenues through property or sales taxes, or indirect charges. The intergovernmental transfers that shift general revenues from taxes collected by the central government to local governments for general or specific uses should not be the only method of funding local projects. A system resembling the CDF projects where direct funding was removed is ideal. Community development fund may bring a bit of feel of ownership by all and it may bring total commitment by all stakeholders.

7.7.4. Clearly defined roles of the community

This is a very important aspect of community participation; a good case is the Bulawayo case where roles were defined to solve a situation. The Bulawayo municipality organised stakeholder in the city in support the introduction of a Number of water augmentation and conservation measures to reduce water losses and raise public awareness of the need to conserve water. According to this report, the city estimated that 23% of the total water entering Bulawayo’s network could not be accounted for and was assumed to be lost primarily through leakage. As a result, a Leakage Control Units was set up to control water losses in the city’s water network by detecting leaks, controlling water pressure, and replacing old pipes and valves. This was done with a set of roles for each stakeholder and this helped reduced the number of burst pipes and minimized underground leaks, reducing unaccounted-for water to approximately 17% (UNDESA, 2004).

Various units should be created with defined roles on every department of proposed projects in the communities. This may also include exiting working groups by taking into consideration women and children and areas such as waste discharge units, environmental quality units, housing units etc. Each of these has to be given to set up units (committees) either elected or selected based of the background of the people. This will help to bring about healthy debate with
polluters about who pays for pollution which impacts on water resources, especially when the polluter is in the agricultural and industries sectors because they are the main pollutants in the study area.

7.7.5 Private sector

All over the world, the role of private sector in providing services can not be taken for granted, the fact that national government with its chronic financial weakness and the high demand for goods and services leaves nothing but the involvement of private sector in supplementing, maintain and extend services to the advantage of all. According to a periodically published paper by Cointreau-Levine(1995), Private Sector Participation on reforms have generally succeeded in extending and improving services and have in all cases restored a measure of financial viability to systems long starved of the necessary resource to support minimum operation and maintenance. In this instance, there is the need to partner the communities to bring success. Private sector should therefore not be ignored, especially the local private group, since they can form the backbone of community participation in the study area. International companies should not be left out since most of them can be the prerequisite for the provision of adequate safe drinking water. The municipal authorities should invite international companies who can work in partnership with the community.

7.7.6 Municipal government

The Kumasi municipal assembly is responsible in using local norms as an advantage of formulating rules and regulations with the help of various communities. Local legislation on waste discharge regulation, environmental quality regulation as well as housing policies should be enacted with the help of chiefs and other local bodies. The assembly has to mediate among all stakeholders; by helping the communities to initiate, formulate and implement decisions based on the interest of the communities as well as the government.

7.7.7 The role of traditional leaders

Since the traditional leaders have big respect of the people, there are wide opportunities for them to be able to organize and motivate the people to contribute both physical and economic resources towards managing their own water. This can be done with their wide knowledge, power and other resources.

7.7.8 Possible role of the community

Community participation in the provision adequate safe drinking water involves playing an active role in managing water and sanitation affairs by sharing and exercising political and economic power. Considering the socio-cultural as well as political back ground of study area, it is prudent to always to involve the Community in mobilization and organization. In this case, suggested roles of the communities were based on McCommon et al (1990);

Community organization
Urban communities should be able to organize themselves with chosen leaders and the formation of various committees. So as to cooperate and coordinate with other bodies such as municipal Assembly, NGOs and other organizations which is likely to bring fast and much improve system of managing their own affair.

Project negotiations:

The decisions as to what is required by the people should be able to be communicated with consultations with the community leaders and agencies as well as officials of the Municipal Assembly which may involve formal bargaining on issues such as project design, Community contributions and external assistance.

Committee operation:

As representatives of their people, they should be allowed to operate effectively and this largely depends on the degree to which they are allowed to function in project development.

Training:

The most important tool is training of selected community members, and all others involved in project implementation. Although some training may be required from external sources, community members themselves should be trained to pass on their skills to others.

Hygiene and user education:

Education should aim at installing responsibility for the system and a feeling of control over water and the environment in the minds of the communities. Training should be motivational and practical. There is the need for recognition of gender in this particular situation; different roles should be given to women since they are primary collectors of water and managers of sanitation, waste disposal and environmental management. Women also bear a primary responsibility in household chores. They should be motivated by the communities to perform.

The IRC reports, where women were drafted for slum upgrading in Tamil Nadu, India in a despair situation among as many as 155 slum areas that house 115000 people is a clear case where women helped to build more latrines to serve the communities.

Community contributions

Communities must be encouraged by leaders to contribute to the development and operation of their projects if they are to feel that they own the resulting system. Settlers should be motivated enough to provide money, local materials and equipment as well as and labour.

7.8 Nongovernmental organizations

Some of the primary difficulties for developing countries include limited physical and financial resources and this is why non-governmental institutions as well as other organizations are expected to play an important role such as the provision of finances, awareness, participation, and monitoring of water and sanitation issues. Again, they are to serve as facilitator in forging
alliances and networks to enhance exchange of information and experiences among different actors as well as to mediate among the state, local communities, and external support agencies.

7.9 Conclusion

The study aim at providing adequate safe drinking water: thereby providing good health to the people. Demand for adequate safe drinking water has been the major concern of the people but the government bid in giving out the entire management to private companies may not yield positive result since most of the people are very poor. The city needs a system where policies will integrate the socio-economic background of the people, taking into consideration their health risk which is aimed at committing the community to give full participation in terms of money, time, views and energy.

The results from this study and records indicate that, water is poorly managed; water managers perform poorly, as only a section of the city enjoys safe adequate drinking water. The rest (poor and informal settlements face a high risk of contracting all sort of water related diseases). Giving the management of water to foreign companies may not necessarily mean everyone will be guaranteed of safe drinking water. In a number of countries, the provision of water supply services is devolved to local governments, it is believed that, this will ensure service delivery more attuned to consumer priorities, and that providers are more accountable for their actions. Depending on the actual conditions and priorities of this community, many more options may be welcome.

Poverty, education and trust seem to be the major barrier to community participation in its earlier introduction in Ghana. Nevertheless, if stakeholders should be identified and recognized and allow to freely contribute, the people will play important role in improving the efficiency of water service provision and management in the city.
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Yvette La Pierre - 2004 – Ghana in picture, Lerner Publication Company
Appendix 1

Questionnaire for selected members of the community

Age-

Sex: male / female

1. level of education
   None…. Primary…. JSS/Middle…. SSS/Secondary…. University….

2. Occupation:
   Salary worker…… Trader…… Farmer…… Artisan…… Unemployed……

3. Which part of the city do you reside:
   Suburb in Southern part of the city………… Suburb in northern part of the city…………

4. Which of the following source do you get your drinking from?
   Pipe borne water…… Streams…… Bole holes…… Wells……
   Vendors………. Rain…….

5. Why the chosen source?
   ............................................................................................................................
   ............................................................................................................................
   ............................................................................................................................

6. Rank your water source (1st, 2nd, 3rd, 4th, 5th, and 6th) in terms of:
   Cleanliness Adequate Conveniences
   Pipe borne water
   Streams
   Bole holes
   Wells
   Vendors
   Rain

7. How will you rate the existing water managers in the city-
   Poor Fair Good
   GWSC
   NGOs
   Private (individuals)
Private (companies)

8. What are the possible reasons why you think that water is not managed well in the city?

9. Have you heard about community participation in water management before?
   Yes……………No…………… Fair idea……………

10. Would you support community participation in managing your water?
    Yes…………… No

12. Possible reasons for the chosen answer above.
    ...............................................................................................................................
    .................................................................................................................................
Appendix 2

Interview guide for water managers

1. What kind of services do you provide?
2. How many people do you service?
3. Which suburbs don’t you serve, why?
4. Are your services regular?
5. How do you access your services?
6. What are the problems hindering the provision of your services?
7. Have you heard about community participation in water management before?
8. Can community participation help in providing adequate safe drinking water?
9. Suggest ways to improve drinking water services in the city.
Appendix 3

Interview Guide; (Metropolitan Health Service).

1. Do you know about some of the drinking water source in the municipality?

2. Which of them do you regard as safe and not safe to drink, why?

3. What are the common cases of drinking water diseases in the city?

4. Which suburb records the highest incidence by records of residency?

5. What do you think are the problems hindering the provision of drinking water services?

6. Have you heard about community participation in water management before?

7. In your opinion, can community participation helps to in providing adequate safe drinking water?

8. Suggest ways to improve drinking water services in the city.