LOCAL PARTICIPATION AND SUSTAINABLE COMMUNITY WATER MANAGEMENT IN PERI-URBAN AREAS OF THE GREATER ACCRA REGION, GHANA

BY

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THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF PhD DEVELOPMENT STUDIES DEGREE

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ABSTRACT

Local community participation and sustainability of peri-urban community-based water management encompasses known and unknown challenges. There is a common assumption that sustainable peri-urban water services will be achieved through local community participation. The principle of community-managed water supply system started, to gain its importance in early 1990s with the World Bank and development partners' sponsored water supply projects. However, local community participation and sustainability (functionality rate) of peri-urban community-managed systems remain a significant challenge. The general objective of this study was to examine how local participation and water institutions affect the sustainability of peri-urban community-managed water supply systems in Greater Accra Region (GAR).

The study was carried out in three communities: Abokobi, Oyarifa and Teiman in the Ga East District of the Greater Accra Region. The study used a combination of research designs such as survey, case study and phenomenology. To meet the objectives of the study, qualitative and quantitative methods were used for analysis. Factor analysis (Structural Equation Model [SEM]), thematic and logistic regression model was applied as analytical tools to examine local meanings of participation and stakeholders' views on the concept of 'participation', scope of local community participation and the roles of water institutions.

The research found that there is variation in viewing local meanings of participation within community members and stakeholders. Furthermore, there is a diverse interpretation and perception of the concept of 'participation' than normally assumed. Participation by local communities in decision-making especially at planning stage is minimal as compared to the implementation, operation and maintenance stages. Moreover, there is a clear relationship between local community participation and sustainability of peri-urban community-managed water system as local community participation increases, community awareness and spirit of ownership also increases. Water institutions are effective and play significant role in sustainability of peri-urban community-based water management.

This study recommends that institutional relationships among Water Sanitation Management Team, District Assemblies (DAs) and project staff should be strengthened to suit the peri-urban community-based water management. The local community participation in peri-urban water projects cannot guarantee the same level of participation in other social community development projects because water is a basic need.

The study concludes that there is a significant difference in the perception of the concept of 'participation' especially in relation to water issues between the local community and the stakeholders and also there is a clear relationship among, the local community participation, the role of institutions and the sustainability of peri-urban community-managed water facilities. Any attempt to analyse local community participation and sustainability of community-managed water system must be based on practical context rather than assumptions.

DECLARATION AND APPROVAL

I, Stephen Joseph Kilasi author of this thesis, do hereby declare that except for references to other people's work which have been duly acknowledged, the work contained in this thesis was done entirely by me as a student of the Institute of Statistical, Social and Economic Research, University of Ghana Legon, in the 2012/2014 academic year. Most assuredly, it is my original work and has not been submitted in whole or part to any university for a degree.

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This work has been submitted for examination with the approval of the following supervisors:

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DEDICATION

I dedicate this thesis to my lovely parents and family for their love and support during the entire period of my studies.

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TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

LIST OF MAPS

LIST OF BOXES

KEY WORDS

Community participation, peri-urban, development and sustainability

LIST OF ACRONYMS AND ABBREVIATIONS

AfDB	African Development Bank
AICD	Africa Infrastructure Country Diagnosis
AMA	Accra Metropolitan Assembly
AOT	Abokobi, Oyarifa, Teiman
BNWP	Bank Netherlands Water Partnership
BPD	Building Partnership for Development
BWR	Basic Water Requirement
CBM	Community Based Management
CBO	Community Based Organizations
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
COM	Community Ownership and Management
CWS	Community Water Supply
CWSA	Community Water and Sanitation Agency
DA	District Assembly
DACF	District Assistance Common Fund
DANIDA	Danish International Development Agency
DDO	District Development Official
DEHO	District Environmental Health Officer
DfID	Department for International Development
DRA	Demand Responsive Approach
DWAF	Department of Water Affairs and Forestry
DWAP	District Wide Assistance Programme
DWSTs	District Water and Sanitation Teams
EHSD	Environmental Health and Sanitation Department
ESA	External Support Agencies
FAO	Food and Agriculture Organization
GAR	Greater Accra Region
GFI	Goodness of Fit Index
GNDPC	Ghana National Development Plan Committee
GoG	Government of Ghana

GPRS	Ghana Poverty Reduction Strategy
GSA	Ghana Standards Authority
GSS	Ghana Statistical Services
GWCL	Ghana Water Company Limited
GWMA	Ga West Municipal Assembly
GWSC	Ghana Water Supply Corporation
HD	Hydraulics Department
ICT	Information, Communication and Technology
IGF	Internally Generating Funds
IFIs	International Financial Institutions
IMF	International Monetary Fund
IRC	International Water and Sanitation Centre
IWRM	Integrated Water Resources Management
JMP	Joint Monitoring Programme WHO/UNICEF
lpcd	Litre per capita per day
MA	Municipal Assembly
MBP	Monthly Billing Payment
MDGs	Millennium Development Goals
MEI	Meeting Effectiveness Inventory
MLGRD	Ministry of Local Government and Rural Development
MMDAs	Metropolitan, Municipal, District Assemblies
MoE	Ministry of Education
MoH	Ministry of Health
MWRWH	Ministry of Water Resources, Works and Housing
NAWAPO	National Water Policy
NCWSP	National Community Water Sanitation Programme
NEPAD	New Partnership for Africa's Development
NGOs	Non-Governmental Organizations
NHH	Norwegian School of Economics and Business Administration
NPRSP	National Poverty Reduction Strategy Paper
O&M	Operation and Management
ODA	Official Development Assistance

PAYF	Pay As You Fetch
PCMM	Public Community Management Model
PHC	Population and Housing Census
PNDC	Provisional National Defense Council
PPP	Public-Private Partnership
PPPM	Public Private- Partnership Model
PRSP	Poverty Reduction Strategy Paper
PSP	Private Sector Participation
PURC	Public Utilities Regulatory Commission
PWD	Public Works Department
RWD	Rural Water Department
RWSN	Rural Water and Sanitation Network
RWSTs	Regional Water and Sanitation Teams
SAPs	Structural Adjustment Programmes
SDM	Service Delivery Models
SEM	Structural Equation Model
SM	System Manager
SRS	Stratified Random Sampling
SWOTs	Strengths, Weaknesses, Opportunities and Threats
TREND	Training, Research and Networking for Development
UN	United Nations
UNCHS	United Nations Centre for Human Settlements
UNDP	United Nation Development Programme
UN-HABITAT	United Nations Human Settlements Programme
UWS	Urban Water Supply
WASH	Water, Sanitation and Hygiene
WATSANs	Water and Sanitation Committees
WB	World Bank
WHO	World Health Organization
WRC	Water Resources Commission
WSD	Water Supply Division
WSMT	Water Sanitation Management Team

WWDR World Water Development Report

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

All over the World, local participation in community water management is growing steadily yet in Sub-Saharan Africa, many of the community-managed water supply systems are not sustainable (Kaliba, 2002). The transfer from centralized to local community-managed water supplies can be termed as a *common global consciousness*[1]. We can relate this common global consciousness to the assumption that local participation has an impact on the sustainability of peri-urban community-managed water supply systems (Agarwan & Narain, 1991). Since the UN Water Conference held in Mar del Plata Argentina in 1977, various international meetings on water resources and environment have developed a common understanding of how water resources and supplies should be managed (Biswas, 2004).

The 1990s was a turning point in approaching water management all over the world; it was characterized by the commodification, internationalization and institutionalization of a *global vision of water* (De Gouvello & Scott, 2012). The vision of the potential of local participation has become one of the cornerstones of the World Bank's Comprehensive Development Framework with a constant emphasis on empowerment processes (Dongier *et al*., 2003; Mclean *et al.*, 2001; Narayan 2002). This vision, however, is not universally shared among policy makers.

Community participation processes in water resources and supply management differ from country to country, time to time, project to project and donor to donor (Clausen, 2004). Donors, concerned citizens, Non-Governmental Organisations (NGOs) and

[1] Global consciousness, many African countries especially Sub-Saharan countries opted for decentralization of water sector from centralized state to community-managed.

governmental agencies are regularly working towards the formulation of adaptive and comprehensive local participation policies in water management (Loucks *et al*., 2005).

The last three decades have experienced a substantial investment and vigorous attempts in increasing global water supply to meet the Millennium Development Goals (MDGs) target 7C[2]. This development is pertinent to the 2013 UN-MDG Report, expounding that in Sub-Saharan Africa (SSA) the proportion of the population using an improved water source has increased from 49% to 63% between 1990 and 2011 respectively. Nevertheless, many challenges in retrospect persist. For example, IRC[3] estimated that in African countries at any moment, 30-40% of the community-managed water systems, particularly hand pumps are either non-functional at all or working at sub-optimal levels (IRC, 2012).

In Sub-Saharan Africa, there is an increasing demand for greater inclusion in local decision-making, yet few countries have the appropriate institutions and mechanisms to ensure a more efficient local participation (Cowie, 2005). The local community's inclusion in decision-making has been implemented through a public administrative transformation (decentralization) process (Smoke, 2003). However, in Sub-Saharan Africa many local governments lack financial capacities and human resources to catch up with emerging challenges (*ibid*). Although the community-managed water system has been operational since the 1990s, the situation has not changed much. Moreso, Meinzen-Dick and Knox (1999) argue that although the theoretical advantages of

[2] MDG target 7C stipulates at is half by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation.

[3] IRC is an International Water and Sanitation Centre which is focused on bridging the knowledge gap and joint learning with partners for improved, low-cost water supply, sanitation and hygiene in developing countries.

local user management of water supply facilities are convincing, the stated objectives of local community participation in terms of positive impact on water resources and sustainability, supply productivity and equity among stakeholders, poverty alleviation and gender equality among organizations are often not met.

In many peri-urban areas in Ghana, major water infrastructure has been in place for about two decades. The amount spent on water asset rehabilitation programs has increased tremendously over the decades due to the synergetic effects of infrastructure ageing, unplanned urbanization, population growth and climate change. Infrastructure deterioration of water systems has further impact on the sustainability of other social services like public health, environment and institutions in various ways (Van der Steen, 2011). It is also argued that the systems are not sustainable because local communities were not involved in decision-making and management during project implementation (WaterAid, 2005). The assumption is that, if the local communities are fully involved, there will be strong ownership and thus ensuring that the systems are maintained and sustainability will be achieved (Montgomery *et al.*, 2009).

A study conducted at Kitase/Kyankama-Ghana revealed that local community participation in community meetings is still low. Community meetings are viewed as the best approach to involve local community in collective decision-making (Addai, 2005). The associated problem in the world today is how the local community under the era of globalization can be involved in decision-making. Agarwal and Narain (1991) claimed that local communities already have the knowledge and understanding; what they must have are the rights over their local resources. The vast majority of people have become passive observers, and a few people are taking decisions for everyone else. Isham and Kahkonen (1999) argue that in some circumstances, although local communities participate in service design, the final

decision is made by local leaders and outsiders who do not necessarily represent the preferences of local communities.

1.2 Sustainability of Community-Managed Water Systems

In Africa, community water supply systems such as hand pumps, water-points and piped water-points have been considered as the most viable systems for peri-urban water supply (AfDB, 2010). Data from a Rural Water Supply Network (RWSN) [4] study showed that in a sample of twenty (20) Sub-Saharan countries the average for non-functionality rate was 36% (Harvey, 2007). In many cases, sustainability of water supply systems is linked with functionality status. There are different variations in figures about the functionality and performance of rural and peri-urban water supplies in Sub Saharan Africa including Ghana.

Recent studies suggest that around a third of water facilities, particularly hand pumps in Sub-Saharan Africa are not functioning at all or are performing well below their designated standard (Harvey & Reed, 2004; AfDB, 2009; Adank *et al.*, 2011). Fitts (2011) argues that there are substantially many hand pumps in Africa but it is estimated that less than half of them are operational. The same study found that more than 80 percent of pumps were inoperable just one (1) year after installation. WHO (1990) also reported that 30–40% of water systems in developing countries may be broken down at any one time; and for individual countries, percentages as high as 60–70% have been reported.

[4] RSWN is a The Rural Water Supply Network (RWSN) is the global network of professionals and practitioners working to raise standards of knowledge and evidence, technical and professional competence, practice and policy; it is strongly emphasized on innovation, documentation, research and capacity building.

In Ghana, the functionality of boreholes and water points varies with geographical location whereas different figures have been estimated by different literature. For example Bakalian *et al* (2009) estimates that 10% of all project boreholes are not working, while Skinner (2009) estimates that 58% of water points need repair. Moriarty *et al*., (2011) estimates 30% of water systems are non-functional. A recent study conducted in Ghana by Nyarko *et al*., (2011, p. 6) found that only 23% of people relying on rural point-systems were accessing the nationally defined minimum level of service (in terms of quantity, quality, distance and cost) although in small towns this rose to 59%. The same study indicates that in Ghana the non-functionality rate of community-managed water systems is around 30%. It can be estimated that in peri-urban locales, non-functionality and unsustainability rate is between 30% and 40% (Duti, 2011).

Also, a study conducted by Braimah (2007) reveals that the major challenge confronting the water sector in Ghana is the limited emphasis given to the "software"[5] side of water supply management. Ghana national guidelines for water suggest that water supply infrastructure should function 95% of the time, basic service level for hand pumps and standpipes is defined as 20 litres per capita per day of drinking water; no more than three hundred (300) people per borehole or standpipe, or 150 for a hand dug well; less than 500m to a water point or 0.5 km. These standards are also in line with Ghana Standard Bureau water quality standards (CWSA, 2010).

Ghana has developed substantial local participation in decision-making processes for service delivery at local levels. In community-managed water supply, local communities are involved through the contribution of 5% (commitment fee) of the

[5] Software side management includes but not limited to personnel, financial management and governance.

capital costs, land for site and also labour where necessary. They are also obliged to contribute towards the operation and maintenance of the facility (CWSA, 2004a). Conversely, the 5% (capital cost) paid by the community has been removed, (GoG, N.D)[6]. The reason is that, there is no evidence that local participation through the contribution of 5% of the capital cost has an impact on sustainability and the question that users of CWCL water system do not pay for capital cost.

There is also a belief that involving people in local decision-making processes and bringing them together around a common cause or interest can empower communities and help build social cohesion which then leads to effective local participation in community development services (Blake *et al*., 2008; Foot, 2009). The functional integrity of the systems and the capacity of communities to maintain and manage the systems need to be evaluated before one can make judgments on the effectiveness of the community to manage and sustain peri-urban water programmes (deWilde, 2008).

Ghana is on track to achieving the MDG of (7:3) target for water supply. The percentage of households with coverage to an improved drinking water source rose from 69% to 84% in 2003 and 2008 respectively (IRC & Agua consult, 2011; CWSA, 2011). There has been a progressive performance in terms of coverage. However, coverage rates alone do not tell the entire story about the financial capability of the system, quality and quantity of the services and extended breakdown periods. Strong revenue flows and functionality of the system are the more important indicators for sustainability (Nyarko, 2007; Braimah, 2007). Peri-urban community water supply services in Ghana still lack sufficient attention to long term-sustainability issues including efficiency of post-service maintenance, funding and system extension.

[6] The removal of the contribution was announced by the president of Ghana at a public meeting held in the Northern Region, however, it is not yet documented by government gazette (No date).

Presently, there are three (3) kinds of local or community-based management regimes: (1) local management of facilities, which are not considered by National Community Water and Sanitation Programmes (NCWSP) (streams, shallow wells); (2) local management of hand pumps under NCWSP; and (3) local management of small town water systems under NCWSP (Eguavoen, 2007). The NCWSP emphasizes water supply coverage and to a less extent functionality and continuity of the existing water system. Water supply in peri-urban areas needs to shift from the current focus on building new infrastructure to a new focus on providing sustainable services. To adopt this shift will require a more effective local participation to an agreed level of quality over time. Xie (2006) argues that one of the approaches in water resources and sustainable management is to strengthen community-based organizations, water user associations and other stakeholders to enable them play a greater role in management decisions. However, Wandera (2009); Fuest (2005) noted that increasing the involvement of local communities does not have a significant impact on the success of these systems. Most water systems do not supply water on a large scale and their prospects for long-term sustainability are weak.

Ghana lacks conscious priority-driven and deliberate efforts to ensure that water facilities keep working for as long as designed (Dotse, 2010). Bortei-Doku (1996) argues that many of the issues that complicate the practice of local participation can be linked to a certain degree of ambiguity in the conception and expectation held by development practitioners as well as the communities involved. It is often not clear whether moral, theoretical or practical concerns should be the driving force behind the practice of local participation.

1.3 Problem Statement

The precise definition of community water system varies according to population size and type of management. The management of the system provides a distinction between the drinking-water systems of small communities and those of larger towns and cities (Harvey and Reed, 2007). In delivering water supply services to peri-urban areas, the management models adopted have tended to be either direct management by local authorities, management by the beneficiary communities or delegated management to a professional operator (Franceys & Weitz, 2003). These management models are further classified as increasing the number of management models (Braimah, 2009). Flynn (2007) and BNWP (2002) argue that no matter the management model adopted for water supply delivery, some key management and institutional principles are believed to be required in order to achieve their targets, objectives and sustainability. In Ghana, the community management model is most encountered in rural and peri-urban areas.

Since the 1980s, the main modality for service provision with regards to community water has become Community-Based Management (CBM). In the past three (3) decades, much has been achieved in peri-urban community water supply and many lessons learned in the provision of new systems. However, local community participation and sustainability of peri-urban community-managed systems remain a significant challenge. The cost of rehabilitation of water infrastructure systems has substantially increased. Water utility is increasingly confronted with deterioration of water infrastructure. Moreover, until the 1990s the Ghana government assumed that the solution to poorly performing water systems in peri-urban areas was to provide

proper infrastructure, neglecting the institutional and managerial solutions required (Schwartz, 2008).

Initially in Ghana, there was only one formal water service utility organization namely Ghana Water and Sewerage Corporation (GWSC) which served all areas (rural, small towns, peri-urban and urban). However from the 1990s, the water supply sector introduced two utilities namely Community Water and Sanitation Agency (CWSA) and Ghana Water Company Limited (GWCL) for water supply delivery (Nyarko, 2007). GWCL is mandated to take care of urban areas while CWSA acts as rural and small towns' services providers and authorities. Peri-urban areas were left without any formal authority mandated to serve them. Furthermore, sustainability of community-managed water supply system in peri-urban are confronted with many factors among others, fast growing population and high population density, rapid urbanization, unplanned building and physical infrastructure.

CBM has undoubtedly brought many benefits and has certainly improved the performance of water supply systems (Bakalian & Wakeman, 2009). Nevertheless, it also has many inherent sustainability limitations, resulting in many peri-urban communities persistently struggling with sustaining their water supplies (Fonseca, 2013). In spite of these sustainability limitations, CBM remains the preferred or default management option by many rural and peri-urban community-managed water systems (Lockwood & Smits, 2011). The discussion of local community participation in public goods management and provision of social services in peri-urban water in particular seems to be dominated by politics and the exercise of power and urban biasness (Shepherd, 1983; Owusu, 2008). Meanwhile peri-urban areas are regarded as a part of built-up urban area. The inter-linkages between peri-urban and the urban has exacerbated the state of local community participation and sustainability of the peri-

urban community-managed water system. This is because in the urban-core there is no community participation and contribution of capital cost for water supply system.

There is less solidarity in peri-urban areas than in rural areas (Durkheim, 1893). It is in this plight that peri-urban communities experience relatively minimal social cohesion than the rural communities. Effective local community participation and sustainability of community-managed water system is attributed by bonded social cohesion. The other key factor for local participation and sustainability of community water supply system is the role played by state institutions and other organizations. As argued by Owusu (2008), in peri-urban areas there are weak institutions responsible for the provision of social services and planning for local community participation. The sustainability of community-managed water systems in peri-urban areas, however, is highly complex due to a combination of many factors. This thesis is of the view that there is a clear relationship among local community participation, role of institutions and sustainability of peri-urban community-managed water systems.

1.4 Objectives of the Study

The general objective of this study was to examine how local participation and water institutions affect the sustainability of peri-urban community-managed water supply systems in the Greater Accra Region, under the assumption that local community participation and water institutions enhance the achievement of sustainability of peri-urban community-managed water supply. With this assumption, the following specific objectives are pursued:

i. To examine local meanings of participation under different socio-cultural perspectives, and stakeholders views of the concept of 'participation' in relation to peri-urban community-based water management

ii. To determine the scope of peri-urban community participation in water management, drivers for participation and sustainability of the system

iii. To examine the role of water institutions in the sustainability of peri-urban community-managed water supply system

1.5 Research Questions

The central research question is to investigate how local community participation and water institutions in Ghana affect sustainability of peri-urban community-managed water supply systems. However, with the central research question, there are also some specific research questions:

1. How do local communities under different socio-cultural situations perceive 'participation' in peri-urban community water management issues and who assigns meanings to the concept?
2. How and to what extent has local community participation impacted peri-urban community-managed water supply?
3. What roles do water institutions perform in the peri-urban community-managed water supply systems?
4. How and to what extent do local community participation and water institutions affect the sustainability of peri-urban community-based water supply?

1.6 Justification of the Study

The shift of peri-urban water management from state centred to community management intended to improve performance (Mollinga, 2007). Despite the significant importance of participation and sustainability in peri-urban areas, water policies and scholarly works have traditionally focused on urban and rural

management settings (Loucks *et al.*, 2005). The debate on whether local community's participation does indeed improve sustainable water supply in peri-urban areas continues without much data and evidence to inform it (Watson, 2003). Local community's participation has been advocated by academicians, practitioners, activists and development organizations as a key aspect of most discussions in sustainable development (Ertgberg-Pedersn, 1995; Balogun; 2000; Sharma, 2000; Brodie *et al.*, 2011). This lack of adequate research to properly validate the assumption that communities are able to manage and finance all costs of the water supply system after inception in peri-urban areas has been considered a major constraint to the development of the small towns water sector (Moriarty *et al.*, 2002). It is more difficult to measure local community participation and sustainability of peri-urban community water supply in a developing country like Ghana where government and water institutions do not have the resources to provide the required data and indicators as stipulated in WHO (UNICEF WHO, 2014). However, the Government of Ghana is in the process of preparing water-monitoring framework on how functionality and water services are assessed. The study comes up with critical contribution to the on-going process of the preparation of functionality and sustainability of water systems monitoring framework. In doing so, the study is not only addressing the challenges of the peri-urban water sector in Ghana but also contributing to global solutions to peri-urban community water services.

"Water is Life", according to the third World Water Development Report (WWDR) and the link between poverty and water is clear. In many countries, Ghana in particular, water is considered as a crosscutting factor in development priorities. It is considered to be important in terms of economic growth and sustained poverty reduction and women empowerment. Therefore, exploring ways of providing

sustainable water supply in peri-urban areas is justifiable in research terms. Moreover, such a study is important because the urbanization growth outweighs the construction and renovation/maintenance of water systems in the peri-urban areas. For example Owusu, (2005; 2008) noted that in 1970 there were 114 small towns. This increased to 174 in 1984 and reached 336 by the year 2000. Also, the population of Ghanaians living in these small towns increased from 30.1% to 47.1% between 1975 and 2004 whereas in 2010 the population was recorded to be about 50.9% (GSS, 2012). The sustainability of the existing and new systems is crucial. Not only that but also as the coverage rate of water supply increases, the challenges for sustainability increases too.

The new concepts of financing community water facilities for sustainability and Integrated Water Resources Management (IWRM) has been incorporated into Ghana's development policies. Ghana, as a member of the ''global village,'' is affected by the paradigm shift and cannot afford to ignore such new concepts. Governments, funding agencies, donors, and civil society actors including NGOs and multi-lateral agencies like the World Bank and the International Monetary Fund have all arrived at a near consensus that community water supply cannot be sustainable and long-lasting without local community participation (Nikkhah & Redzuan, 2009). Ghana sees herself in the eyes of the African continent and across world as a beacon of democracy among African states. Democracy implies among other things, the involvement and participation of local citizens throughout the development cycle i.e. conception of ideas, feasibility studies, planning, implementation and monitoring and evaluation. It is in this context that the country needs to create the frameworks that will enable and facilitate local communities to effectively participate in development issues including water supply management.

The research project is to unearth information that can be extremely valuable in efforts to improve the effectiveness of local communities, government and donor agencies in enhancing and employing the participatory approach in sustainable community water supply management. In theoretical discourse, the study is adding knowledge that deals with power and power relations between powerholders and community powerlessness in the process of participation.

1.7 Conceptualization of Key Terms

1.7.1 Participation

The word "participation" is often used without providing a clear and definite statement of what exactly it means. It is a broad term used in different disciplines and applied to many fields with many variations in meaning and interpretations (Midgley, 1986; Kumar, 2000; Sanoff, 2000; Heyd & Neef, 2004). Though participation is imperfectly realized, it is an ideal against which practical efforts should be constantly measured (Paul, 1987). Local participation is an approach to development whereby opportunities are created for local beneficiary communities to be involved in the initiation, planning, execution, controlling and monitoring of a project cycle in order that they gain a meaningful understanding of the development process and develop the necessary capabilities and self-confidence needed to sustain the project (Koasa-ard *et al*., 1998). Karl (2000) defines participation as a process that empowers people and communities through acquiring skills, knowledge and experience leading to greater self-reliance and self-management.

The terms ‘participation’ and ‘involvement’ are often used interchangeably; both are generally used to indicate a process through which community has a voice in public policy decisions, but they can have distinctively different meanings. Involvement

means drawing a person, a community or a group of people in to raise awareness about an issue. Involvement is the beginning point of participation. Participation is the second stage after involvement (NHH, 2010). For example, local community can be involved but they may not participate in the process. This study adopted, Karl's definition because it is more relevant or applicable to the aims of the study.

1.7.2 Local Community Participation

The motivation for local participation lies in its benefits for those who have an interest in water supply management processes because they are affected by them or can have some influence on them (FAO, 2000). Among other things, these benefits include cooperation between different sectors in water supply management. Community participation is rooted in the concept of community development that is an approach in development programs that aims to improve the living conditions and standards of people in a particular area (Nikkhah & Redzuan, 2009). Community participation is sometimes used to indicate community self-reliance or self-help, i.e. an activity that is usually undertaken by a government agency, is undertaken by the community on its own (Sheng, 1989).

1.7.3 Community

Sociologically, "community" is defined as a group of people with face-to-face contact, a sense of belonging together and common interests and values within a clear and defined social structure (Connor, 1985). It conceals a range of vested interests in terms of economic position, ethnic status, social status, gender balance and age. Literature reveals that it is difficult to find a community which exactly share the same interests. However the term "common" can be the best word to define or to conceptualize the term "community". It should be a group of people who share the

common interests (Agarwal & Narain, 1991). In this regard, three basic characteristics of a community are established; these are: shared locale, common ties and social interaction (McMillan, 1996).

According to NHH (2010), community is defined as a spider web made up of many different people, who can look, feel and believe differently from each other, but are linked because they share something in common. In relation to water supply, a community is defined by the area which a given water system can realistically serve (Harvey & Reed, 2004). In Ghana, based on water service provision CWSA guideline, communities are classified into three categories of settlement types as follows: rural for a population of 75 – 2000; peri-urban (small town) for population of 2001 – 5000; and urban for population of 5000 and above, (CWSA, 2003). The Ghana Statistical Service (GSS) classifies urban localities with 5,000 or more persons while localities with less than 5,000 persons are classified as rural (GSS, 2012).

1.7.4 Community Development Projects

Development activists define community development projects as community-based initiatives which intend to improve existing conditions of entire community life. These may include activities such as the construction of infrastructure and services which will enhance social support for the more vulnerable; the development of community water supply promotion programmes which are managed by and based on community resources (Bracht & Tsouros, 1990).

1.7.5 Sustainability and Sustainable Development

'Sustainability and sustainable development' have been defined in several ways by different institutions and researchers (Awoke, 2012). Narayan-Parker (1993) defined

sustainability as "the capacity to maintain service and benefits, even after special assistance (managerial, financial and technical) has been phased out". Taccon *et al*., (1992) express sustainability as a project which should provide lasting benefits to the beneficiaries if it is to be judged successful in providing sustainability. DFID (2000) suggests that sustainability has been achieved when prevailing structures and processes have the capacity to continue their functions over the long term. Bjornlund (2004) defines sustainability as the satisfactory functioning and effective use of services, and equity as when everyone (men and women, rich and poor) … have equal access to benefits from projects. For the purpose of this study, sustainability is defined as the continuous provision of acceptable services in an equitable manner to beneficiaries for a targeted life time without any form of discrimination.

1.7.6 Peri-Urban

Boume *et al*., (2003) and Allen (2003) define peri-urban as the countryside that is not either recognized as 'urban' (low density, lack of accessibility, lack of services and infrastructure) or 'rural' (loss of fertile soil, agricultural land and natural landscape). It has both characteristics of urban and rural (rural-urban linkages). The peri-urban zones are fast growing areas because of the underlying pressure of speculative capital anticipating future urban growth. From a sociological perspective, the peri-urban space captures the interface between rural and urban social groups and constant transition and institutional fragmentation, as well as change in land use which is driven by urban growth. The government of Ghana defines a small town by the CWSA Act; 564' 1998 as "a community that is not rural but is a small urban community with a population range from 2,001 to 50,000 and above (CWSA, 2003).

It should be noted that the researcher of this study treats peri-urban the same as small town.

1.7.7 Institution

The term institution is a multifaceted concept whose meaning is very complex. Hodgson (1988) defines institutions as (1) organizations whose behaviour strongly influences economies and economic change (e.g. the family, public service organizations), (2) social norms, rules, habits, customs and routines which are stable, shared and understood patterns of behaviour with economic implications and (3) legal frameworks and constraints, such as the laws of property and contract, together with the pattern of property rights they protect. According to North (1991), institutions are the rules of the game in a society or more formally the humanly devised constraints that shape human interaction. In consequence, they structure incentives in human exchange whether political, social or economic. It is noted here that institutions can be formal or informal. Formal are rules that human beings devise and informal are such as conventions and codes of behaviour. Institutions may be created or they may simply evolve over time.

Institutions are defined as "the formal and informal rules and practices that govern behaviour of different groups" (Isham, 2002, p. 671). The strength of the community's institutional capacity is its ability to affect rules and foster an environment of self-monitoring and enforcement. This study, deals with only water institutions responsible for water supply such as government agencies-Ministry of Water Resources, Works and Housing (MWRWH, Ministry of Local Government and Rural Development (MLGRD) and other institutions at local level, for example Water Sanitation and Management Team (WSMT) and WATSAN.

1.8 Thesis Structure

Chapter 1 introduces the study, describes the background to the study, states the objectives of the study, research questions and explains the conceptualization of key terms. Literature related to the work is discussed in chapter 2. Theoretical, conceptual frameworks and water resources use and sources of drinking water in Ghana are introduced in chapter 3. Chapter 4 introduces a research methodology, which describes the research paradigm, research design, and operationalization of variables. The background and the profile of Greater Accra Region (GAR), demographic results to the study areas and the overview of the Abokobi, Oyarifa and Teiman (AOT) community water supply system is also included in chapter 4. The results and discussions of the study of examining local meanings and stakeholders' perception of the concept participation under different socio-cultural situations especially in relation to water are presented in chapter 5. Chapter 6 presents the results and discussions of the determinants of scope of local community participation in peri-urban community-managed water supply systems and factors driving communities to participate or not participate in CWSP. The same chapter presents the relationship between local community participation and sustainability of peri-urban community-managed water supply. The results and discussions on the roles of water institutions in the sustainability of peri-urban community-managed water supply are presented in chapter 7. Finally, summary of the findings, recommendations and conclusions from the study are presented in chapter 8. This thesis is concluded with references, annexes and appendixes as used to accomplish the study.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter discusses literature on the concept of community participation in community-managed water supply in peri-urban areas, decentralization, sustainability and indicators for sustainability assessment. Literature on the link between community participation and sustainability are summarized. It also presents the role of water sector institutions and their contributions to sustainability. In addition, this chapter builds the theoretical foundation of the study. The chapter is structured according to the issues in community water supply and decentralization and its sustainability in Sub-Saharan Africa. It includes: 1) Local community participation in peri-urban community-based water supply, 2) Water supply and sustainability in SSA, 3) Decentralization process and community participation in water supply systems, 4) Functionality as a proxy measure of sustainability, 5) Gender and women participation in community-managed water supply, 6) Policy and strategies on sustainability of community water supply, 7) Water sector institutional issues.

2.2 Local Participation in Community-Based Water Supply and Its Importance in Development

Local participation in development projects in developing countries is of historical significance. What began in the 1940s under colonial rule has evolved in quite different ways to the present time (Hickey & Mohan, 2004). However local participation has an ideological history in Ghana in which "the people" are obliged to contribute in different ways to the development of the country especially in water sector. According to National Water Policy (NAWAPO), community's contributions is the amount of valued resources in cash, in-kind and labour, as well as time and

local knowledge, committed by community members toward planning, implementing and managing interventions for improving water and sanitation services. The level of community contribution reflects both initial investment costs and recurrent costs (GoG, 2007).

Local participation is viewed as a mechanism which can among other things: (i) Enhance sustainability; (ii) Improve efficiency and effectiveness; (iii) Allow poverty reduction and eradication efforts to be taken to scale; (iv) Make development more inclusive and participatory; (v) Empower poor people, build social capital, and strengthen good governance; and (vi) Complement market and public sector activities. Consequently, the central element of local participation is participation by the local community in decisions that directly affect their living conditions. This implies the sharing of power between the authorities and the local community (UNCHS, 1983, p. 6).

Mansuri and Rao (2004) suggest that local participation leads to development projects that are "more responsive to the needs of the poor . . . more responsive government and better delivery of public goods and services, better maintained community assets, and a more informed and involved citizenry" (p.2). Moreover in these benefits is the role of participation as a means of providing and accessing information (Alesina & Ferrara, 1999). When a community participates, it both provides information about its preferences and gains information that may influence its optimal choice (*ibid*). Both types of information are likely to lead to increased welfare for the community. Case studies emphasize that it is important the communities have control over project initiatives, decisions, (financial) resources and upstream planning (World Bank 1996; Narayan 1995). There is empirical evidence that this notion of participation is

incomplete as it misses the role participation plays as a means of affecting the distribution of power and ownership (Binswanger & Aiyar 2003).

Community participation involves holding discussions and open forums between community members themselves and with government authorities or Non-Governmental Organizations involved in advocacy so as to contribute ideas for inclusion in policy development and change in operation strategy (DWAF, 2005). Dungumaro (1999) emphasizes the need for taking indigenous knowledge on board when planning, developing, implementing and managing water resources. The author argues that although experiences and knowledge of local people lack scientific explanations, they are strong weapons in solving local problems.

Studies by Jackson and Morrison (2007); and Dungumaro (1994), prove that indigenous communities have valuable knowledge systems that can be incorporated into strategies for environmental and water management and that the knowledge systems are an essential cultural and technological element of human society and sustainable development. The effective local community involvement enhances and ensures the autonomy, transparency and accountability in the service delivery. Brett (2003) argues that as politicians risk losing power when poor services are delivered they encourage participatory strategy for community development. But this apparently happens in advanced and more democratic countries. In countries where the illiteracy rate is high and citizens do not understand their roles in the decentralized systems, community involvement and participation may just be reduced to the discussion of issues by the few elite in the community (Braimah, 2009).

Local community participation is believed to bridge the gap between service providers and customers as the local communities are better able to provide

information that best reflect their preferences and by utilizing local resources (Kim, 2008). Local community participation could also contribute to the reduction of bureaucracies and ensuring responsiveness and accountability from public services providers as they are end users (Brown *et al*., 2006; Kim, 2008).

2.3 Water Supply and Sustainability in Sub-Saharan Africa (SSA)

On the coverage, of the estimated 1.1 billion people who lack access to safe water supply worldwide, most of them live in peri-urban areas of low and middle income countries (UNDP, 2006; UN-HABITAT, 2006). About a half of these small towns/peri-urban areas without adequate water supplies are found in developing countries especially in Sub-Saharan Africa (Calaguas and Cann, 2006) which, of course, includes Ghana. Water supply in peri-urban areas gained attention by 1990s when the International Drinking Water Supply and Sanitation Decade (1981-1990) was launched (Braimah, 2009). Following the review of the challenges that militated against meeting the water supply target within the Water Decade in the early 1990s water supply to small towns/peri-urban began to gain attention (*ibid*).

However, of the above initiatives, governments of SSA countries had to undergo some reforms in water supply sector so as to overcome the challenges in delivering water supply services to the peri-urban areas. Saleth and Dinar (1999) claimed that the reforms desired by the politicians are those that have been estimated to produce higher political benefit and not necessarily those that ensure sustainable and effective water supplies. In many Sub-Saharan African (SSA) countries, the reforms in the water supply sector generally came about as products of some general reforms in a country, most of the reforms were influenced either by political, governance and or economic reforms (Fragano *et al*., 2001; Rivera, 1996), not specifically related to

water. This is the case in Ghana where the decentralized system of water supply service delivery in rural and small towns (World Bank, 1994) was to conform to the ongoing reforms in decentralized system of local governance started in 1988 (Owusu, 2005; Olowu, 2001; Braimah, 2009).

Over 63% of Sub-Saharan African (SSA) countries (or 26 out of 39) will not be able to meet the MDG for water by 2015 (Halve by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation) as their actual access rates grew much more slowly than is required to achieve the target (MDG, 2013). SSA has grown from 49% to 63% of water supply between 1990 and 2011 respectively (MDG Report, 2013). Interestingly, even the 37% of SSA countries that seem to meet the MDG to achieve the target, the water system functionality rates are not remarkable as it is estimated that at every moment between 20-40% of water systems are inefficiently functioning (Bakalian *et al*., 2007). These estimates are far from precise. This is because of data limitations regarding the conditions of tenure and access to services. For example, in most peri-urban areas where informal settlements commonly rely on both improved and unimproved sources of drinking water, they may utilize more than one regular source of water, switching between public community-managed water system, unprotected wells and water vendors (UNDP, 2006). Secondly, the presence of boreholes, protected wells and springs do not necessarily imply the availability of safe water and functionality of water system. This is common especially under conditions of widespread poor management, old asset infrastructure, lack of proper operation and maintenance financing and local participation initiatives (Harvey & Reed, 2006).

In order to overcome the challenges in delivering water supply services to the peri-urban areas, governments have had to introduce reforms in the water supply sector

(Braimah, 2009). But it is claimed that the reforms that are desired by the politicians are those that have been estimated to produce higher political benefit as against the political cost (Saleth and Dinar, 1999) and not necessarily those that ensure sustainable and effective water supplies. It is argued, however, that water reforms had been pushed by external donors and International Financial Institutions (IFIs) but politicians have captured them for gaining popularity and ignored the guidelines and procedures for delivering water supply services (*ibid*).

2.4 Decentralization Process and Community Participation in Water Supply Systems

The term "decentralization" was widely used and has come to promote a variety of objectives (Ndegwa, 2002). Following a neo-liberal agenda, characterized in Sub-Saharan Africa by Structural Adjustment Programmes (SAPs), institutions such as the World Bank and the International Monetary Fund (IMF) are supporting decentralization as part of downsizing central governments (WB, 2000). Local government and local institutions are the key recipients of decentralized powers.

Decentralization is by no means a new phenomenon in Africa, but in Ghana the most recent wave of decentralization, the language has made the important shift from emphasizing terms of national cohesion and the management of local populations, to a discourse more focused on citizen/community participation, pluralism and rights (Crook & Sverrisson, 2001). It is assumed that decentralization can be a way of mobilising resources for poverty reduction (Owusu, 2005; 2008). The three forms of decentralization- deconcentration, devolution and delegation do not only differ from one another in objectives and strategies but also differ from country to country. This is because different countries have different commitments, priorities and interests

(Conyers, 1983). A key aspect of peri-urban water supply management is decentralization of powers, responsibilities, ideal community ownership and authority, to local grassroots in line with the demand-responsive approach to service delivery (Black, 1998; World Bank, 1994).

Decentralization in water supply is assumed to improve service delivery, to strengthen and cement local governments as well as to improve health outcomes and the environment (Fragano *et al.*, & Rosenweig, 2001). On the other hand, it has also been indicated that in most cases, responsibility for decision-making and participation is always passed on at local level units without the financial or regulatory mechanisms of implementation (Moriarty et al., 2002). In practice, there is considerable confusion and obfuscation about what constitutes decentralization (Ribot, 2002).

Decentralization and the local governance reforms have to a large extent also contributed to the proliferation in numbers of small towns/peri-urban areas in Ghana as all the capitals of the 124 District Assemblies in 2009 were small towns (Braimah, 2009). In accordance with the Ghanaian water law, decentralized water supplies are under the responsibility of the independent Community Water and Sanitation Agency (CWSA, Act 564). Nowadays, the CWSA sets standards for water projects and facilities and monitors on-going projects. Further, the agency facilitates financial involvement of international donors. CWSA is organized at different administrative levels. Its Regional Water and Sanitation Teams (RWSTs) support and provide technical know-how for the District Water and Sanitation Teams (DWSTs) to monitor water projects in the particular district.

Since 1980s, pressure from the IFIs particularly IMF and World Bank introduced SAPs (Boachie Danquah, 2010). Through these programmes the IFIs asked that

governments in the 3rd world countries including Ghana to decentralize power to local level and use of participatory approaches for community development. In 1990s bilateral donors and the IFIs also conditioned the poor countries to develop Poverty Reduction Strategy Paper (PRSP) with which broad stakeholders' participation has become a new conditionality for loans, grants and support. In the same way, the Ghana National Development Planning Commission (GNDPC) has been playing role to advocate community participation (GoG, 2007).

In Ghana, the enactment of the Local Government law, 1988 (Provisional National Defence Council [PNDC] Law 207) marked a significant period in the history of decentralization in the country where the decision-making process and development of the districts was vested in the District Assemblies (DA). The DAs came to be vested with legislative, deliberative and executive powers to formulate programmes and strategies for the national mobilization and utilization of human, physical, financial as well as other resources for overall development targets in their localities (MLGRD, 1992).

Participation has captured the imagination and hopes of politicians and policy makers (White, 1996; Jochum *et al*., 2005; Cornwall, 2008). This is particularly true for community participation (Dunn *et al*., 2007). Local community participation in community development projects, water in particular, are led all too often by the World Bank and other international development agencies (Marin, 2009; Kirkpatrick *et al*., 2004) and are primarily based on the same principles 'one size fits all' in all the different countries they operate (UN-HABITAT, 2006), ignoring the economic, social and political differences that exist in those countries. As long as low-income countries depend on these donors for their water sector funding (Franceys, 2008; Braimah,

2009), this will continually result in bottom-up participatory approach to be questioned because these receiving countries have to obey the principles and conditions of the donor funding agencies (Franceys, 2008). Local community participation needs not only to be country specific but also community specific to tackle specific challenges and short comings of sustainability. The influence of the donor partners and world financial institutions have on the community participation in general, and small towns supply in particular, has been a major challenge, especially when the projects are donor funded. Many SSA countries have constituted community participation in their constitutions and incorporated into policies and in various development plans and strategies. However, as stated by Braimah (2009), formulating policies and implementing them in reality are two different cases.

A lot of efforts have been made to promote decentralization in Sub-Saharan Africa. Guidelines and principles have also been endorsed. For example, the Victoria Falls Declaration by the Africities Summit 2000, recommended and agreed that: The purpose of decentralization should be to devolve power and responsibilities to the lower echelons, promote local democracy and good governance with the ultimate objective of improving the quality of life of the people.

Factors Affecting Local Community Participation in Water Management

According to Engel *et al*., (2005) the decision to use particular water source in a peri-urban area is influenced by prices and income constraints as well as preferences, knowledge, and perceptions about water quality differences. It is argued that participation is a voluntary process but in many developing countries, local community participation is treated as non-voluntary (Bracht & Tsouros, 1990). Local participation is like teaching the "Donkey to drink water". This relates to an English

proverb that says, "*you can force a donkey to go to the river or the well, but you cannot force it to drink water*" [7]. The proverb about "taking the donkey to drink" indicates that persuasion is more effective than force. Experience shows that in some development projects, bylaws have been passed to force everyone to contribute either her/his power or cash.

2.5 Functionality as a Proxy Measure of Sustainability

Functionality is defined as a continuity of a facility asset and or a machine constantly running at the desired output, while, Oxford English dictionary 10th edition, defines performance as 'the capabilities of a machine or product' and 'the extent to which an investment is profitable' (Van Heck, 2009). The performance of a community water facility asset is linked to its function in the system of continuity to deliver the required level of service. In community water facility asset, the functionality is measured by the use of 'performance indicators' that keep it running and producing its desired output (e.g. water quantity, quality, pressure, availability) and infrastructure maintenance (Adank, 2009; Abram, 2001).

Many Sub-Saharan African countries use functionality as a proxy indicator for sustainability of development projects. Lockwood and Smiths (2011) categorized three indicators of functionality namely service authorities, service providers and service provided. Service authorities are measured through the capacity to monitor, control and regulate the service providers. While service providers include NGOs, state utility and private firm organizations/companies. Service providers are a link between service authorities and beneficiaries (end user of the service). The service

[7] The proverb was accessed at http://www.phrases.org.uk/meanings/you-can-lead-a-horse-to-water.html

provided to end users is the most visible aspect of water provision and is often a link between service authorities and service providers. It is rated to what extend the beneficiaries (community) are satisfied with the service provided and how sector norms and standards are being met including affordability and willingness to pay reliably and access of a given quantity and acceptable quality, (See Figure 2.1).

Figure 2.1: Three levels of monitoring sustainability (Lockwood and Smiths, 2011)

The service provided to the community is the most obvious aspect of community water provision and is often described in sector norms and standards in terms of a number of criteria including a user's ability, affordability and willingness to pay, reliability and access to a given quantity of water of an acceptable quality within a given time for collection (often measured in terms of distance) and the number of people sharing access to the water collection point.

It is argued that better-sustained peri-urban community water supply services are the outcome of projects that are more responsive to the specific community conditions and needs and are better in meeting the demands and expectations of the various local user groups (Masduqi *et al.*, 2008). There are specific local community factors that often play an important role in peri-urban community water sustainability such as the extent to which a community is well organized, the presence of strong democratic leadership and power-sharing, the absence of factions and leadership conflicts, social cohesion, absence of monopoly or dominating decision-making, trust and the local economic income circumstances (Harvey & Reed, 2004). The other factors for sustained peri-urban community water are choice of technologies and service levels,

choice of locations for facility and decisions on local maintenance, management and financing (Brikké & Bredero, 2003).

2.6 Gender and Women Participation

Aschalew (2009) argues that participation of communities and especially women in all water project cycle is very necessary. More attention is put on women because they take the central role in the collection, management and use of water as well as general sanitation of the household than men (Fong *et al*., 2003; Hamdy, 2003; Regmi & Fawcett, 2001). There is also evidence indicating that more active involvement of women can optimize the results and impacts of community water projects (Mukherjee *et al*., 2003; DFID, 1997). Women participation has been advocated and discussed in various summits and conferences. For example, the Dublin Statement 1992, principle No. 3 and the Rio Declaration (1992) addresses that 'Women play a central part in the provision, management and safeguarding of water'. Furthermore, the World Summit on Sustainable Development established a MDG target for gender equality and empowerment of women (Heyzer, Kapoor & Sandler, 1995).

This pivotal role of women as providers and users of water and guardians of the living environment has seldom been reflected in institutional arrangements for the development and management of water resources (Joshi & Fawcett, 2001). Acceptance and implementation of this principle requires positive policies to address women's specific needs and to equip and empower women to participate at all levels in water resource programmes, including decision-making and implementation, in ways defined by them. In traditional cultures, women often have the responsibility of collecting water for the family's various uses. As such, it is appropriate that they have

a voice in the decision-making process for a water supply programme and management (Meinzen-Dick & Zwarteveen, 1998).

2.7 Policy and Strategy on Sustainability of Community Water Supply

The concept and practicability of sustainability of water and sanitation services varies from country to country, NGOs to other implementing agencies. However, they all agree and share the common word of 'functionality' (Abrams, 1998). Abrams developed a simple phrase of four words about sustainability (used, maintained, paid and permanent). These four words imply that:

- The fact that the facility continues to work implies that it is being used
- Its continued functionality implies that it is being maintained and sustained
- Furthermore, its maintenance is being paid for, or it would deteriorate
- The phrase 'over time' has no limit – i.e. the service, or some development of it, is permanent.

Though, philosophically very sound, a significant number of community-based development projects in the water and sanitation sector fail to deliver benefits to community over the long term in Sub-Saharan countries (Antonio, 2005). Part of the cause for this failure lies in poor understanding of the issues of sustainability (*ibid*).

The importance of sustainability in water supply projects is crucial for any sustainable development. Abrams (1998), identified four importance of the sustainability of water supply as highlighted: First, progress toward the MDGs or any other service coverage targets is undermined by non-sustainable interventions. If services are falling into disrepair as others are being newly constructed, the net progress toward full coverage decelerates – the antithesis of the drive toward scaling-up of service delivery. Secondly, however successful an intervention may be in the short-term, if its

beneficial impact is not sustained over a long period of time, it cannot be deemed cost-effective.

Thirdly, non-sustainable interventions serve to discourage the households, communities and local government/NGO institutions that have seen some short-term benefit only to be disappointed as hard-won gains snatched away. On the other hand, sustainable outcomes build confidence, self-reliance and self-esteem. In addition, as confidence and self-esteem grow among communities and supporting institutions, possibilities for further self-help or locally initiated undertakings can emerge thereby creating a multiplicative effect. Harvey and Reed (2004) argue that in Africa, policy and strategy on community water is more influenced by world financial institutions, e.g. IMF and World Bank.

CWSA policy favours the communal management option. Whilst centralized state management is often manifested as pre-reform management option in small towns, the privatization of piped systems in small towns was developed as a second alternative management option for small towns where communal management was not favourable due to technical factors or not desired by the population (*ibid*).

2.7.1 Community Cost Recovery Model, Financial Sustainability and Financing Capital Maintenance

Cost recovery of water services refers to the recovery of all costs associated with a water system, programme or service to ensure long-term sustainability (Cardone & Fonseca, 2003). In the 1990s, within the context of community-based management models, the concept of cost recovery was addressed in which users would be required to pay some form of user charge (user fee) or tariff for water supply to (re)cover at least or all the operational and minor maintenance costs (Jaglin, 2002). Community-

based service providers, it was assumed, would be responsible for setting and collecting tariffs and using the funds to carry out operational and maintenance (O&M) activities (Komives & Prokopy, 2000; Brikké & Rojas, 2001; Cardone & Fonseca, 2004). Recognizing the challenge of ensuring that user charges or (user fees) were 'cost reflective' (i.e., covering all running costs), the Camdessus panel[8] on financing introduced the term 'sustainable cost recovery[9]. This philosophy was proposed as a way of giving the water sector the financial assurance it needs while acknowledging affordability problems for the poorest and the need for subsidies in some circumstances (Winpenny, 2003).

Both the philosophy and practice of paying some form of user charge or user fees for water services to recover costs have become accepted (Rogers, Silva & Bhatia, 2002). A survey of water charges in 122 developing countries by Briscoe & de Ferranti (1988) revealed that there was no cost recovery in 28% of the countries and only part of the operation and maintenance costs were recovered in 30% of the countries. Full cost recovery was attempted in just 6% of the countries studied. However, in practice many community-based water management projects in Ghana have cost recovery shortfalls (Jackson & Gariba, 2002). In community-based management, contributions to capital expenditure have become a synonym for the concept of 'increased ownership' of the service (Nyarko *et al*., 2006). Recovering the costs related to providing and maintaining a community water supply service is essential to enhance

[8] Camdessus panel is a Joint Initiative of the Global Water Partnership, World Water Council & 3rd World Water Forum held in Kyoto (2001) chaired by Michel Camdessus. It addressed ways and means of attracting new Financial Resources to the water and suggested 87 recommendations. The panel held seven full meetings in 2002 and early 2003, in Paris (twice), Manila, Washington, The Hague, Johannesburg and London.

[9] The camdessus panel suggests-Long-term cost-recovery policy anticipating needs, subsidies from public budgets secured well in advance and revenues from users as a group with cross-subsidization to ensure affordability

sustainability of the service. It is one among the major obstacles to achieving sustainable drinking water supply in Sub-Saharan countries despite major efforts in the sector over the past decades. In community-managed piped systems, cost recovery is affected by the ability and willingness of users to pay for the water services and sound financial management (Brikk'e & Rojas, 2001). Komives *et al*., (2005) argues that difficulties in relation to cost recovery and financial viability have reduced the functionality of community-managed water systems.

Many Sub-Saharan countries and Ghana in particular, have enshrined the principles of 'sustainable cost recovery' through users paying tariffs that cover all costs including those of capital maintenance. These principles are also documented in their policies and regulations for rural water supply (Fonseca, Franceys & Perry, 2010). However, this does not guarantee that policy guidelines and interventions reflect actual practices. There is evidence that community water systems that are doing well have been able to fund their capital maintenance and repairs from their capital accounts (Hopknis, Lauria & Kolb, 2004). Systems that have not been able to finance their capital maintenance and repairs needs from their capital funds suffer unexpected and long breakdowns. The reasons why some schemes are not able to fund capital maintenance themselves are insufficient revenue, poorly managed systems (governance) and high capital maintenance needs (*ibid*; Dworkin 1980).

In economics, it is believed that economies of scale are achieved when increased supply of water results in reduced unit cost of producing and distributing the water (Braimah, 2009). Such economies of scale are an important feature for sustainability of peri-urban water supply facilities because the more the customers, the lower the unit cost of operation and maintenance. This argument reveals that the demand for

water services has substantial significance to sustainability of the water facility. However, some literature indicates that not only is the demand for water service a factor for sustainability of the facility, but also determining water pricing and quality are important too. In many Sub-Saharan African countries peri-urban water has been managed by community management model and in many systems there are piped networks with standpipe points. Piped water supply is considered to be a capital-intensive activity (Nauges and Berg, 2007), whereby the resources and costs needed for individual private connection are to be recovered fully from consumers themselves.

Pricing for water at a community water facility is among the challenging factors for sustainability of water projects (Gyau-Boakye & Ampomah, 2003). In Sub-Saharan countries most unit costs for non-networked water services are calculated or estimated per volume (Bucket) (*ibid*). In networked water supply services, it is most common to use the price per cubic meter (M^3), as this is presumed to reflect the total cost (but in practice rarely does) and, to some extent, the efficiency of the utility is weak (Bayliss, 2003). Furthermore, water unit costs per person are often reported using a normative population and not the de facto served population.

In many instances only the cost per infrastructure is provided and there is no measure of the population covered. A borehole constructed for a population of 500 people might be used by 200 or by 1000 people. The cost per person is very different in these circumstances, and service levels may fall if a source is overused (Fonseca *et al.*, 2011). According to Moss (2007), there is a substantial relationship between costs, revenue, value perception and sustainability of water supply facilities. Studies by Moss (2007) indicate that where there is high value perception of services provided, high revenue than operation and maintenance costs leads to sustainability. Low value

perception of services provided and low revenue collection than operation and maintenance costs leads to unsustainable facility. Figure 2.2 illustrates the relationship between costs, revenue, value perceptions and sustainable versus unsustainable water supply facility.

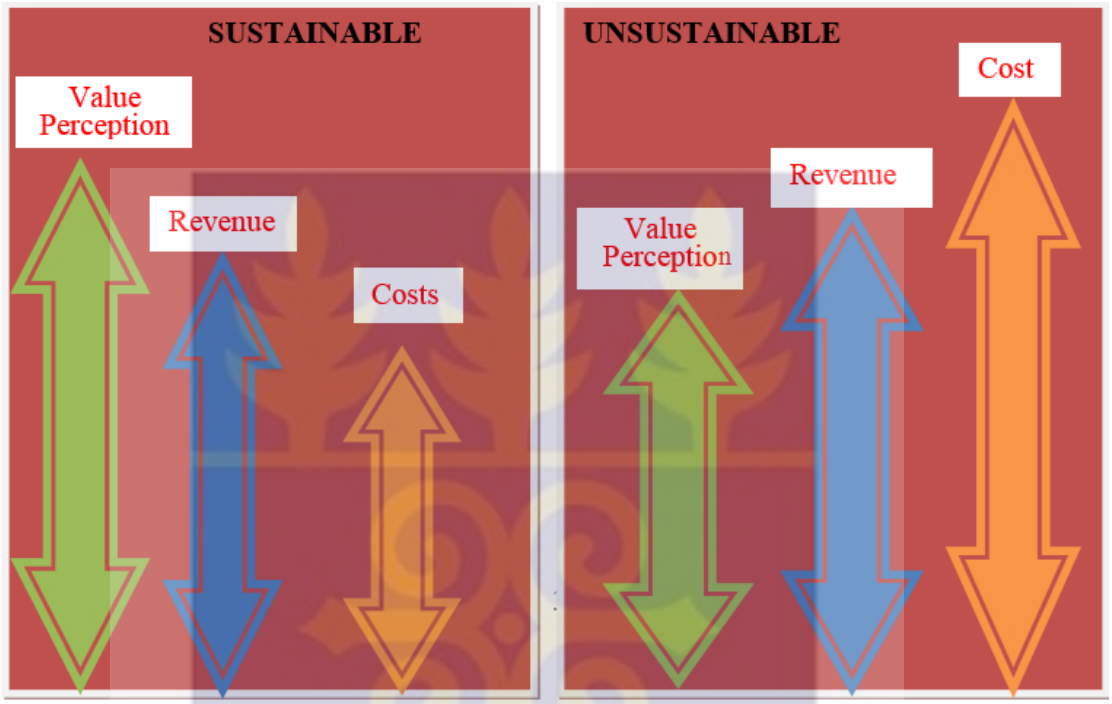


Figure 2.2: The relationship between costs, revenue, and value perception and sustainable against unstainable project components (Moss, 2007).

2.7.2 Infrastructure Management, Sustainability and Ownership and Property Rights in Community Projects

Water infrastructure supports the way society works and the development of public infrastructure is the focus of governments and public finances, though all or some of it may be financed by non-state actors (Fonseca, 2013). For infrastructure to remain useful and sustainable, maintenance and constant check-up are key factors. Maintenance is defined as the activities that allow infrastructure to effectively perform and deliver the outputs for which they were built (Gyamfi, Gutierrez & Yepes Boscán, 1992).

The term "ownership" as an aspect of participation and sustainability that is a means of exerting influence or bargaining power. Grossman and Hart (1986); Hart and Moore (1990), defines ownership of a physical asset in terms of residual control rights over the asset - to also include fewer tangible assets such as the decisions undertaken in a development project. This illustrates that the greater a community participates in an activity, the more likely it is to have a say in that particular activity and to enhance security for a project. The basic property rights model then suggests that ownership over a decision should be given to the agent whose effort/investment is more important in the decision (*ibid*). By giving this agent greater influence in the decision, we ensure that this agent has high incentives to make the investment leading to greater benefit for all hence sustainability. There is a claim that:

> An increase in community participation in non-technical project decisions improves project maintenance and sustenance while such an increase in technical decisions worsens project maintenance and sustenance (Khwaja, 2004; 5).

The statement above is fairly intuitive as we recognize that decisions requiring local information are more likely to be sensitive to the community's investment whereas those that require technical information are more likely to be responsive to the external agency's investment. Literature indicates that the spirit of ownership increases not only taking care for it but also effective use and financing it for better service delivery. In Ghana, the ownership of community water facilities is mandated to District Assemblies but they are ideally owned by local communities.

2.8 Water Service Delivery, Community Participation and Sustainability of Peri-urban Community-Managed Water Supply System

Many Sub-Saharan African countries recommend the “minimum water” for Basic Water Requirement (BWR) of 20 litres per person per day of clean water for drinking

and sanitation be provided by water agencies or governments (Yolles, 1993). The amount of individual/household water consumption functions independent of lifestyle and culture (Gleick, 1996). While the amount of water required for maintaining survival depends on surrounding environmental conditions and personal physiological characteristics, the overall variability of needs is quite small (Okun & Ernst, 1987). Unfortunately, there are many reasons why Sub-Saharan African governments or water providers may be unable to provide this amount of water in peri-urban areas. Some of the reasons include rapid population growth or migration, unplanned and rapid urbanization, the economic cost of water supply infrastructure in regions where capital is scarce, inadequate human resources and training as well as lack of political will and priority (Masduqi *et al*; Bhandari & Grant, 2007).

Local community participation and sustainability of community water supply are like two-way traffic: each one depends on the other. For example, local communities are willing to pay for a better sustained water service but the service can be better sustained because of willingness to pay. The relationship between local community participation and sustainability can only be explained if one is considered as dependent and the other independent. Different types of local community participation at different stages of the process can lead to different impacts on sustainability (Johnson *et al*., 2001). For example, participation at the design stage can influence overall project sustainability and help ensure that a project is appropriately focused from the start (Johnson, 2003). According to Arapto and Adisenu (2006), ineffective local participation is as a result of the people's mentality, that it is the responsibility of government to provide water for them. Local community participation as a concept rests on the philosophy that development is for the people;

people are the means and end of development. Those are: Participation as a right and participation as a strategy (Young, 2000).

The idea of local participation is also supported by new institutional theorists, that the best way to achieve sustainable peri-urban community water resource management is to design institutions that are governed and administered by resource users themselves and to involve local resource users in resource management (Pahl-Wostl, 2007). Water resource management is an integral aspect of the preventive management of sustainable water supply (Loucks, 2000). Climate change and potentially polluting human activity in the catchment and or the source will influence sustainable peri-urban water quality and infrastructure (Engelman *et al*., 1993). Human activities have impact on the steps required to ensure safe and clean water, sustainability and preventive action may be preferable to maintain it (*ibid*). The influence of land use on sustainable peri-urban water supply should be regarded as part of local community water resource management.

2.9 The Public -Private Economic Value of Water and Household Water Supply

The issue of water as a human right applies at the international, national level as well as at the local level. There is increasing recognition that water and sanitation is a human right and it has to be incorporated into constitutions, policies and legislation, (McCaffrey, 1992). However, in many Sub-Saharan African countries at local levels, there are no mechanisms, infrastructure and facilities for its applicability (JMP, UNICEF & WHO, 2012). The United Nations General Assembly passed Resolution

64/292, recognizes the right to safe and clean drinking water and sanitation as a human right that is essential for the full enjoyment of life and all human rights[10].

In many SSA countries, there are populations/households whose water is derived from household sources such as private wells and rainwater. Individual/ households using non-community peri-urban water supplies vary from one country to another, region to regions and one area to another depending on some factors like availability of ground water sources, depth of water table sources and or hydro-geological conditions, costs for drilling, quality of water, technology and availability and accessibility of other sources of water (Terpstra, 1999). For sustainability of these systems, appropriate efforts are needed to ensure proper management, safe collection, storage and treatment of their drinking water.

2.10 Institutional Issues

In managing small town's water supply services provision, there are different institutional arrangements and measures found in literature. These include the existence of a national authority to manage, regulate or to provide the overall policy framework and a local government to take up the responsibility of ensuring accountability from service providers (Robinson, 2003; Fragano *et al.*, 2001). Irrespective of institutional arrangements, successful management of peri-urban water supply is believed to lie in the ability to plan and manage adaptively (Braimah, 2009) where small towns are characterized by social and economic dynamism rapidly changing customer base and demand (Moriarty *et al.*, 2002).

[10] Resolution on Human Right to Water and Sanitation (UN General Assembly Resolution A/64/292, 28 July 2010), available at http:// www.un.org/News/Press/docs/2010/ga10967.doc.htm

There are many different institutional issues that influence peri-urban community water supply sustainability. The traditional approach to community water supply in Sub-Saharan Africa has been that of a project or facility with a finite life span (Harvey & Reed, 2004). The finite life span is determined by the nature of technology, capacity of the system and the sources of water. Community water supply is a service and as usual, any service requires on-going and dynamic management and governance (Jones, 2001). The institutional issues need be coordinated and forging water stakeholders' partnerships. There are several different potential stakeholders who were involved in community water supply programs as identified by Building Partnerships for Development (BPD, n.d). These include:

- Donors-External Support Agencies (ESAs);
- Non-Governmental Organizations;
- National and local government institutions;
- Communities and Community-Based Organizations (CBOs);
- Private sector companies and individuals; and
- Non-profit sector organizations (mosque, churches etc).

2.10.1 External Support Agencies

Traditionally, water supply in SSA countries has been heavily dependent on external support from development partners, international and bilateral donors (Harvey & Reed, 2007). These external donors have significant influence on policy decision-making and often work in partnership with governments (Bratton, 1990). ESA support has positive and negative impact on the government and the community. The impact varies from one country to another and from community to community. It provides crucial financial, technology and material resources but ESA often dictate the terms

under which funds can be used, which reduces government autonomy (Harvey & Reed, 2004).

2.10.2 Government and Non-Governmental Organizations

National and local government agencies are primarily the main stakeholders if the peri-urban water services are to be sustainable. In many cases the principal role of government is that of co-ordination, e.g. co-ordination of those ministries and departments that have direct and indirect responsibility for water supply. Government staff, skills and practices have significant impact on enhanced sustainable peri-urban service delivery (Gross, *et al*., 2001).

For so many years, NGOs have been the primary implementers of water supply particularly in the peri-urban and rural areas while governments concentrate in urban water supplies but currently the situation has changed (Carter, 2002[11]). It is very rare to find community-based water and sanitation system that can run successfully without being supported either pre, during or post implementation (*ibid*). International and local NGOs rely on funds from ESAs or charitable contributions, and majority of NGOs have adopted the community management model particularly to the areas that are not covered by piped system.

2.10.3 Community Based Organizations

In general CBOs are local institutions based, such as women's groups and development co-operatives. Harvey and Reed (2004) argue that CBOs are made up of

[11] Notes, contribution to 'Beyond the Community' through E. Conference on scaling up of Community Management in of Rural Water Supply, can be found at https://www.jiscmail.ac.uk/cgibin/webadmin?A2=ind0206&L=WSSCMANP&P=R7435&1=WSSCMANP&9=A&J=on&d=No+Match%3BMatch%3BMatches&z=4. accessed on 09/07/2014

volunteers who commit their time and energy for the good of the local community. In the water sector, CBOs can be water committees. Even where there is no existence of CBOs, communities play a crucial role in sustainability since they are the end-users of water services.

2.10.4 Private Sector and Small Scale Providers

The private sector comprises private companies and individuals that provide services for profit or to make a living. In water supply, the private sector is mostly involved in drilling boreholes, engineering services, hand-pumps mechanics and water vendors (Bernage, 2000). The private sector is increasingly playing a crucial role in water supply in Sub-Saharan Africa. Rees (1998) argues that while profit is the principal driving factor for such stakeholders, professional pride and esteem are also important motivators that should not be overlooked.

The private-small scale water providers include street vendors, water resellers, kiosks and water tankers. Water vendors can be categorized into two groups. The first group are those who resell water as their own business while the second group are those who sale at standpipe public point. The World Bank in World Development Report (1992) recognizes private small-scale providers to improve the access of local communities through legal, contractual, regulatory and policy adjustments that allow flexibility and variety (World Bank, 2004). Similar arguments have been presented by Kariuki & Schwartz, 2005 and Baker, 2009. The United Nations UN-Habitat has also recognized the importance of small providers but unlike the World Bank, it draws more attention to the value of community-based water supply schemes in peri-urban settlements rather than private independent providers (UN-Habitat, 2003).

While it is estimated that private small-scale providers such as street vendors, water resellers, kiosks and water tankers (excluding community or publicly operated water schemes) supply 50% of the urban population in Africa yet currently, it is not known what rates the private small scale providers serve Sub-Saharan Africa peri-urban areas (Dardenne, 2006). The figure goes above 80% in some urban centres in Tanzania, Nigeria, Senegal, Kenya and Sudan (Kariuki & Schwartz, 2005). While these providers have a substantial presence in urban and peri-urban areas, their services come at high prices and are of poor quality. Ghana in particular too does not have figures that show the rate which private small scale providers contribute to water supply in peri-urban areas.

2.11 Conclusion

Ultimately, the problem of unsustainable community water facilities can be resolved through boosting the public water investment alongside active local members' participation. In fact participation is political hence many of the potential solutions to the problems of peri-urban development in general and local participation to water and sanitation in particular require multifaceted interventions which lie within the authority of government to support and promote local community participation. Peri-urban planning in general requires a strong public administrative system with good coordination between various ministries, NGOs and other water institutions and development stakeholders to solve the issues that hamper local community participation and sustainability of water facilities for peri-urban amenities. In all, participation, water sector involvement and sustainability literature demonstrates that there is no strong argument that can negate the basic belief that the relationship between local participation and project sustainability is generally positive.

CHAPTER THREE: THEORETICAL, CONCEPTUAL FRAMEWORK AND WATER SUPPLY SYSTEMS IN GHANA

3.1 Introduction

In this chapter, the researcher has tried to review the existing theories related to local participation and sustainability and indicated how the theory of ladder of citizen participation has an effect on community participation as well as the sustainability of community-managed water supply systems. The chapter starts with a discussion on the levels of community participation followed with the theory of Ladder of Citizen Participation. Furthermore, different levels of different authors are discussed. It also includes rural-peri-urban-urban continuum. It also discusses the interrelationship between the concepts and their analytical application in this study. Moreover, it discusses water resources use and sources of drinking water and water sector development and institutional framework.

3.1.1 Levels of Local Community Participation

There are different levels of local community participation in public goods and services. Different authors have come up with different models of the levels of community participation. For example, Arnstein (1969) has identified three typologies with eight rungs or degrees of community participation. Aref and Ledzuan (2009) also identified about three levels of participation with seven types or degrees of community participation, meanwhile Jennifer and Trevor (1998) identified two levels of community participation. The levels of community participation may differ from one community to community, project to project and from donor to donor. Table 3.1 illustrates different levels of community participation.

3.1.2 The Theory of Ladder of Citizen Participation

The theory of Ladder of Citizen Participation Arnestein (1969), states that the process of community participation ranges between different types and levels and it is determined by the level of citizen power granted by the powerholders. The theory distinguishes among three main typologies of degrees of community participation: a) degrees of non-participation, b) degrees of tokenism and c) degrees of citizen power. The three main typologies are extended into eight levels of community participation: 1) manipulation, 2) therapy, 3) information, 4) consultation, 5) placation, 6) partnership, 7) delegated power and 8) citizen power. Each type and level is corresponding to the extent of community's power in determining the sustainability of their development project.

The theory of Ladder of Citizen Participation does not work in vacuum or in a stagnant society. The application and practice of the theory might be hampered among others by: a) Cultural explanations (values, norms, and roles), b) Cognitive explanations (verbal skills and knowledge about the organizations) c) Structural explanations (alternatives, resources available, and the nature of benefit sought) (Nelson & Wright, 1995).

The theory of Ladder of Citizenship Participation describes that in community participation there is powerholders' and the have-nots side. The powerholders side includes racism, paternalism and resistance to power redistribution. On other hand, the have-nots side include inadequacies of the poor community's political socioeconomic infrastructure, opportunities and knowledge-base (Choguill, 1996).

The theory articulates that community participation is the redistribution of power that enables the poor communities, presently excluded from the political and economic

process, to be deliberately included in the future (*ibid*). It is the strategy by which the have-nots join in determining how information is shared, goals and policies are set, tax resources are allocated and programs are operated. In short, it is the means by which they can induce significant social reform that enables them to share in the benefits of the affluent society (Haynes, 1998). Power needed to affect the outcome of the process. The theory contends that there is a critical difference between going through the empty ritual of participation and having the real power needed to affect the outcome of the process. This difference is explained by the following words: "I participate; you participate; he participates; we participate; they participate . . . They profit" (Arnstein, 1969, p. 216). The words highlight the fundamental point that participation without redistribution of power is an empty and frustrating process for the powerless. The theory of Ladder of Citizen Participation is further described through a diagram 3.1.

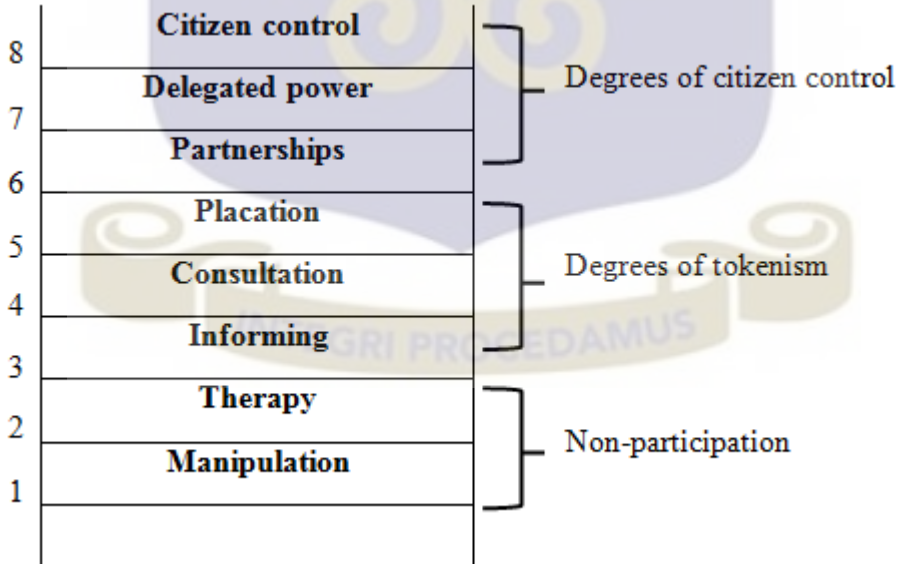


Figure 3.1: Eight Rungs on a Ladder of Citizen Participation (Arnstein, 1969).

The bottom degree of the ladder is non-participation. The rung is described by two degrees of participation; these are (1) manipulation and (2) therapy. Non-participation

rung, this rung describes that there is no real objective to enable the community to participate in planning or conducting programs. Evidence indicates that many projects gone under such approach have failed to sustain and provide targeted services, because local communities who are the beneficiaries have remained as observers rather than implementers (Botes & Rensburg, 2000).

Rungs (3) informing and (4) consultation belong to levels of "tokenism" that allow the have-nots to hear and have a voice and choice. At this level of tokenism the local community may indeed hear and be heard. But under these conditions the community lacks the power to insure that their ideas and views will be heeded by the powerful within the community (Arnstein, 1969). Under some circumstances the elite group and or influential people in the community may tend to capture the ideas for their own benefits *ibid.*

Rung (5) placation is a higher level of tokenism because the ground rules allow have-nots to advice, but retain for the powerholders the continued right to decide. Further up the ladder are levels of community power with increasing degree of decision-making clout. The community may enter into rung (6) partnership that enables them to negotiate and engage in trade-offs with traditional powerholders. At the topmost rungs, (7) Delegated power and (8) Citizen control. At these levels the community majority obtain decision-making seats or full managerial power. These topmost rungs are labelled as genuine participation (*ibid*). The rungs of participation as stipulated by Arnstein (1969) are further detailed below.

Manipulation

At this degree level, it is completely non-community participation. It's the powerholders who educate, persuade and advise the community, not the reverse. This

indicates that the agenda is manipulated by emphasizing the terms "informing-gathering". The powerholders use the community to "prove" that "grassroots people" are involved in the program. But the program may not have been discussed "with the people" or it may have been described at a public meeting in the most general terms.

Therapy

It is commonly to assume that powerless community is synonymous with mental illness, as if they cannot think clearly and reason for some phenomena. At this rung the whole process of community development is centralized in the state (Choguill, 1996). The local resources and knowledge are not utilized. Mosse (2001) reports that, community water projects where local knowledge was neglected proved failure.

Informing

Informing the communities of their right, responsibilities and options can be the most important first step toward legitimate community participation. However, too frequently the emphasis is placed on a one-way flow of information-from officials to communities-with no channel provided for feedback and no power for negotiation. Under these conditions, particularly when information is provided at a late stage in planning and pressures from donors, community have little opportunity to influence the program designed "for their benefit" (Choguill, 1996).

Public meetings can be a better way of delivering information, but it can be turned into a one-way sided to favor the powerholders by providing superficial information, discouraging questions and or giving irrelevant answers (Cleaver, 1999).

Consultation

Inviting community's opinions like informing them can be a legitimate way to entice their full participation, but if consulting them is not combined with other modes of participation, this rung of the ladder is still a sham since it offers no assurance that community concerns and ideas will be taken into account. The community may be consulted but not participated (Botes & Rensburg, 2000).

Community participation is a complex process, community are primarily perceived as statistical abstractions, and participation is measured by how many come to meetings and or take brochures home. What community achieve in all this process is that they have "participated in participation" and what powerholders achieve is the evidence that they have gone through the required process of involving all the community.

Placation

It is at this level that the community begins to have some degree of influence though tokenism is still apparent. At this level some grassroots are taken on boards of decision-making. It is argued that the few people taken on boards should be accountable to the community (Choguill, 1996). Placation is not a level that issues are discussed by the community but retain for powerholders the right to judge the final decisions. The degree to which community is actually placated, of course, depends largely on two factors: the quality of technical assistance they have in articulating their priorities; and the extent to which the community has been organized to press for those priorities (Arnstein, 1969). In practice, it is difficult for community participation feel truly shared decision-making, such that community might view themselves as "the partners in the program....." in general, the community should have a significant impact on the comprehensive planning from identification to evaluation stage of the

project (Choguill, 1996). Here, there should be mechanisms for encouraging and insuring the community has influence over the implementing agencies of the program (Lammerink *et al.*, 1999).

Partnership

At this level of the ladder, power is in fact redistributed through negotiation between community and the implementing agencies or donors. They agree to share planning and decision-making responsibilities through such structures as joint policy boards, planning committees and mechanisms for resolving impasses.

Partnership can work most effectively when there is an organized power-based in the community to which the project leaders are accountable to the entire community; but this, is relevant when the community has the financial resources to pay its leaders reasonable honoraria for their time-consuming efforts. It's argued that the externally promoted participatory approaches used by governments, donors, or NGOs should focus community's priorities rather than a general national development priority (Bamberger, 1986). The partnerships should be based on the principles of non-intrusive collaboration, mutual trust and respect, a commitment to solidarity and equality in the relationship (Whitmore and Wilson, 1997).

Delegated power

At this level, the ladder has been scaled to the point where citizen hold the significant authority to assure accountability of the program to them. Negotiations between communities and public officials can also result in communities achieving dominant decision-making authority over a particular plan or program.

The community has power to hiring and firing of project staff and leaders, issuing subcontracts for maintenance and repairs. However, some of the subcontracts have to

be approved by government authorities, where as in community managed water system (Ghana) final approval power rest with the District Assembly (CWSA, 2003).

Citizen control

The community is granted a degree of power or control that guarantees that participants to govern a project or be in full charge of managerial aspects and be able to negotiate the conditions under which "outsiders" may change them. At this stage the poor have greater degrees of power over their lives.

Bamberger (1986) argues that community participation can be achieved when local community influence the direction and execution of the development process rather than merely receive a share of the benefits. For truly citizen control, the following aspects should be included: 1) Sharing project costs (money or labor and occasionally goods) during the project's implementation or operational stages. 2) Building beneficiary capacity: either through ensuring that participants are actively involved in project planning and implementation or through formal or informal training and consciousness- raising activities.

Ownership and control of community-managed water system have a profound impact on participation in water projects (Mathbor, 1990). Ferrer (1988) emphasized some key issues to be worked toward in a participatory community water management program includes greater economic and social equality and better access to services for all. Schafft & Greenwood (2003) note that in community-managed water systems there should be a fair and equitable distribution of benefits, as well as redistribution of services, to enable poorer people to get a fairer share of society's wealth and to participate fully in the project.

It is widely recognized that participation in community-managed water supply with stronger forms of participation, involving control over decisions, priorities, plans, and implementation; or the spontaneous, induced, have a positive impact on achieving collective goals (Arnstein, 1969; Rahman, 1993; Smith, 1998). Uphoff (1998) also emphasized that who participates in the process (and how they participate) is as important to consider as to whether there is local community participation, and of what kind.

The theory of Ladder of Citizen Participation is relevant in this study in the sense that many community development works involve participation of the communities or beneficiaries (Smith, 1998). Community managed water supply is a key component of the development arena. Thus, local community participation in water management acts as a catalyst for community empowerment that then influences policies and programs that affect the quality of their lives or the lives of others (Gamble & Weil, 1995).

3.1.3 Forms and Levels of Participation

Scholars like Aref and Ledzuan (2009) identifies three levels and seven forms of community participation. Aref & Ledzuan's (2009) levels and forms of participation look same as Arnstein's theory of Ladder of Citizen Participation. It is only that Arnstein (1969) categorized it into eight levels meanwhile Aref and Ledzuan (2009) categorized it into seven levels. But they all intercept into three typology of community participation.

Table 3.1: Levels of community participation

Level	Type	Characteristics
Genuine participation	Empowerment	• Local community is directly contacted (Dewar, 1999; Choguill, 1996; Pretty, 1995) • Local people have power over all development without any external force or influence (Choguill, 1996; Dewar, 1999)
Symbolic participation	Partnership Interaction Consultation Representation	• There is some degrees of local influence in development process (Arnstein, 1969) • Communities have greater involvement in this level. The rights of local communities are recognized and accepted in practice at local level (Pretty, 1995) • People are consulted in several ways, e.g. involved in community's meeting or even public hearings. Implementing agency may accept some contribution from the locals that benefits their project (Arnstein, 1969).
Non-participation	Informing Manipulation	• Local People are informed about development programme, which have been decided already. The developers run the projects without any listening to local people's opinions (Arnstein, 1969). • A development project is generally developed by some powerful individuals, or government, without any discussion with the local community (Arnstein, 1969)

Source: Aref & Redzuan (2009)

Jennifer and Trevor (1998) summarized the Ladder of Citizen Participation into only two levels of local participation that are low level and high level of community control. The Table 3.2 describes the degree of community influence in peri-urban water projects.

Table 3.2: Degree of community influence in peri-urban water projects

Low level of community control ↓	The community is asked to contribute labour, land, or locally materials around them.
	The agency delegates certain level management and/or operation and maintenance tasks to the community and trains community members for these tasks.
	The community is involved in discussing various options during the planning phase of the project, but final decision-making power remains with the agency.
	Options are discussed and decisions made jointly. Compromises to adjust the project to the community and agency realities.
High level of community control	Final decision-making and authorization rests with the community. Agency technical support, advice and assistance is provided at the request of the community.

Source: Jennifer & Trever (1998).

The decisions and activities in which a local community can participate in a community-managed water facility are obviously numerous. The scope for participation of local community is among the major challenges in community-managed water facilities. The authorities can only establish collaborations and contact with local community organizations and leadership after the project has been approved and project funds have been allocated (Taylor, 2007). Since many community water projects are donor driven, once a project has been approved, many irreversible decisions have already been taken (Hoek-Smit, 1982). It is in this context, the local communities have to adhere to the irreversible decisions made by donors or development partners.

The weakness of Arnstein's classification is the inconsistency of the criteria to distinguish the forms of participation. There is no difference in the locus of power between placation, consultation, informing, manipulation and therapy, power remains

in the hands of the authorities. These five forms of participation merely describe techniques employed by authorities to deal with the community, (Sheng, 1989). Again, Rifkin and Pridmore (2001) criticized Arnstein's ladder of citizen participation that it describes the process of participation than to explain the forms of community participation.

3.1.4 Rural-Peri-Urban-Urban Continuum

Social scientists concerned with community development argue that the residents of a locality share a common fate[12] regarding such issues as local services and extra-local recognition that is people can be mobilized to the extent that they see themselves as having a common fate. There are different arguments whether large population size and high density of the population have any significant impact on community social bonds and participation. According to Kasarda and Janowitz (1974), neither large population size nor high density significantly weakens local social bonds. Thus, the individual-level or household attachment to the community is a function of an individual's length of residence. However, it should be noted that the length of residence has additional implications at the macro (community) level including permanent residence, investment and ownership of immovable properties. Indeed community residential mobility is posited or viewed as a key barrier to community-level social organization (Kasarda & Janowitz 1974).

The logic of Kasarda and Janowitz's argument is inextricably tied to a basic focus of the human ecological and social change paradigm. The Kasarda and Janowitz's argument also points to the role of community-level residential stability in promoting

[12] Traditionally, the community are likely to participate in local activities and common resources that affect their lives

an individual's social integration and cooperation into the community. An individual in a highly mobile area faces quite different constraints from residents of stable areas regardless of his or her own length of residence. An individual in highly mobile area has fewer opportunities to participate in local affairs in the area with high residential turnover like peri-urban areas. On the other hand Sampson (1988) argues that population size and high density are among the primary exogenous factors that affect community and social structure hence affecting local community participation. It is believed that strong community ties are rooted in informal and formal association with family life and on-going socialization processes. The forces of peri-urbanism are hypothesized to weaken community kinship, social bonds and community participation in local affairs and affection ties for the community (Wirth, 1938; Fischer, 1982).

Kornhauser (1978) argues that residential mobility increases local institutional instability; thus individuals in unstable communities will automatically find it difficult to engage in local community development projects. The motivation to involve in local activities is also reduced in peri-urban areas since residents know such involvement will not last for long (Freudenberg, 1986). It is argued that effective local community participation is bounded by strong community sentiments and neighbourhood. Therefore neighbourhood instability and population/residence change may reduce individual sentiments for the community both for permanent residents and newcomers (cf. Baldassare, 1979; Fischer, 1982). Collective attachment refers to the level of sentiment and attachment to local community.

Home ownership residents factor continues to have very large positive effects on social and community ties both in rural and highly urbanized areas. Clearly not only does home ownership have direct effects on social and community ties but these

effects are essentially identical at both ends of the urban-rural continuum. However in the development perspective, it involves social, cultural, economic and political aspects of life.

3.2 Conceptual Framework

The conceptual framework of this study was guided by the argument that the level and degree of local community participation in community managed-water supply system is as the result of power and power relations between powerholders and community beneficiaries. Thus the level and degree of community participation has impact on the sustainability of peri-urban community-managed water supply system. State institutions, NGOs and other institutions play significant role in determining typology and degree of local community participation. The state institutions may include not limited policies, legislation, regulations, laws and by-laws.

This study is primarily concerned with the understanding of the possible relationship that may exist among local community participation, water sector institutions and the attributes of sustainability of peri-urban community-based water management. The process of community participation is categorized into 6 parts: degrees of participation, initiation and process, control and power, roles of practitioners, stakeholders and partnerships. The levels of local community participation is categorized into three levels (high, moderate and low) are determined by the following indicators: participation in the planning process, participation in public meetings, participation in decision-making, gender involvement and the status of contributions. Meanwhile, measuring sustainability was guided by CWSA sustainability guidelines of which three indicators were used: service authorities (management), service providers (functionality) and service provided (beneficiaries

satisfaction). The conceptual framework in Figure 3.2 is adapted to capture the complex interplay among the actors, processes and levels of participation and sustainability of peri-urban community managed water supply in this study.

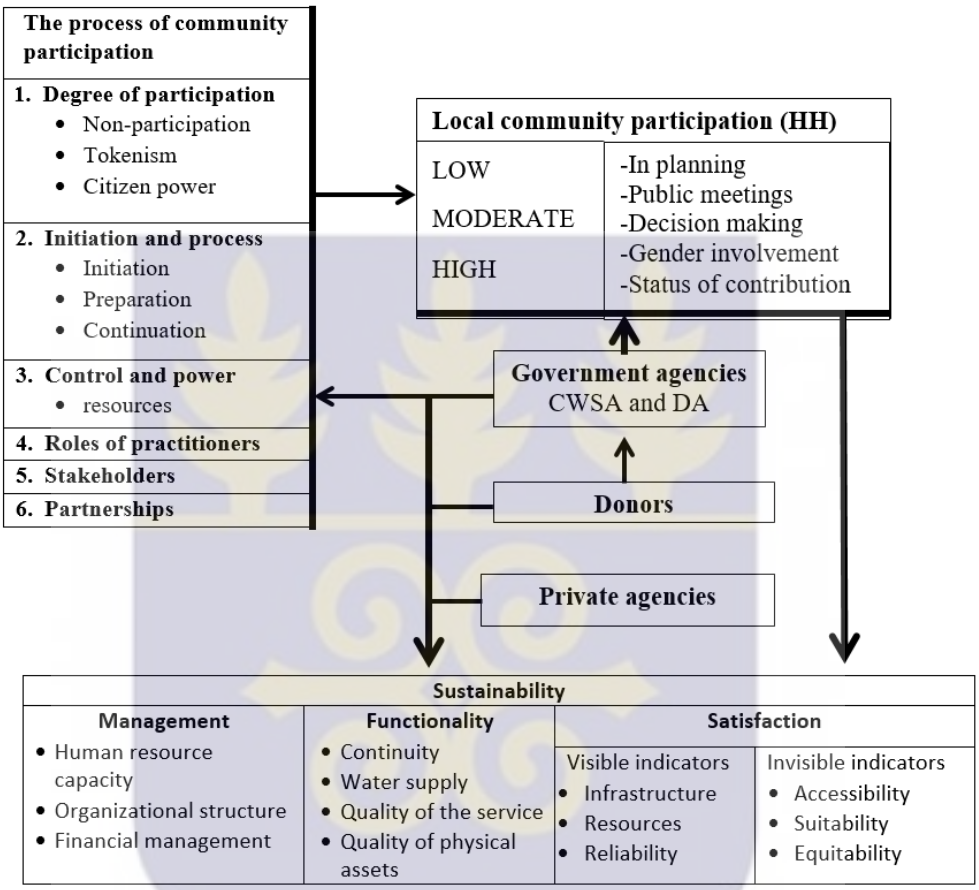


Figure 3.2: Conceptual Framework for Community Participation and Sustainability of Peri-urban Community-Managed Water System (Author's construct, 2013).

In discussion of the conceptual framework of the study, the actors included were household, community and water sector institutions including government agencies, private sector and Non-Governmental Organizations. There is growing evidence that high level of local community participation has positive impact on sustainability of community water supply projects (WB, 2011). It has been claimed that the individual/community has to be effectively involved in all the processes of the community water project cycle, including initiation/identifying, planning, implementation, monitoring and evaluation. However, their involvement is influenced

also by individual, socio-economic, political and cultural status and satisfaction with the services, (Botes & Rensburg, 2000). Degree of community participation in peri-urban community-based management can be grouped into 3 levels, namely, high (active participation), moderate (tokenism) and low (non-participation).

The government actors include ministries, NAWAPO, local government agencies, state legislators and village leaders (Harvey & Reed, 2004). The main role of government should be to establish institutional rules especially at local level and processes that encourage and support such local decision-making. Meanwhile the role of donors and NGOs should be to support, strengthen and facilitate the process.

Private water sector has also a great role in community-managed water sustainability. In peri-urban areas, private water supply companies or firms are contracted for technical operations like well drilling, fixing the hand pumps, distribution of water system, rehabilitation and provision of spare parts. The private water sector is normally for profit making. Therefore service, durability and sustainability risk remain with the government and the local community (Davis, 2005). Empirical study indicates that private water sector involvement in peri-urban water supply has increased the capital and service cost which are paid by the community. Thus, such increase is covered by the final consumers: the local community. Nickson and Vargas (2002) found that the capital costs for well drilling from private companies were up to 40% higher than those of public construction. Local community needs to be involved and informed whether the project is covered by the private or public construction.

The water sector has been recognized as an economic good for many years so the involvement of private sector in water services cannot be eluded. Many countries in

Africa including Ghana have relinquished "the command and control approach" in water supply to the private sector. But it still requires government intervention in monitoring and evaluation to ensure quality and standards not only from private water sector but also all suppliers. Since the government is unable to provide adequate monitoring at the local level due to lack of resources, it is where local community participation becomes an important factor (Rogers *et al*., 2002). The importance of community participation in peri-urban water supply is emphasized by the multilateral and bilateral organizations, international organizations and development partners, governments, academicians and practitioners, yet conceptualization, perceptions and practice vary greatly (Harvey & Reed 2004). Non-Governmental Organizations have a critical role in community-managed water sustainability. Studies show that in Sub-Saharan Africa, more than 60% of the community water supply is financed by donors and NGOs. In Ghana it is estimated that about more than 99% of rural and small towns water systems are financed by development partners (IRC & Aguaconsult, 2011). NGOs are the catalyst for advocacy and lobbying and are the ones who are the link between the government and local community.

Sustainability of peri-urban community-managed water supply system is also guided by 3 indicators (refer Figure 3.1), management, functionality and community satisfaction. In management it includes human resource capacity and organizational structure while system functionality includes continuity, technology and quality of physical assets. Community satisfaction with services delivered includes visible (infrastructure, reliability and institutional support) and invisible indicators (accessibility, suitability and equitability).

The focus of the framework was the holistic analysis of the levels of community local participation and water institutions that may have been affected by powerholders

(state and donors). Furthermore, the conceptual framework established a link between local community and water sector participation and its effect on sustainability of peri-urban community-managed water supply system.

3.2.1 Use of Water Resources and Sources of drinking Water in Ghana

Ghana's water resources potential is divided into surface and groundwater sources. Surface water sources are mainly from three river systems that drain Ghana: the Volta, South Western and Coastal river systems. Approximately 70% of the land area is covered by the lower Volta River system that is made up of the Oti River and the Red, Black and White Volta Rivers, and basically coincides with the savannah area. The South - Western river system and the Coastal river systems make up 22% and 8% respectively of total land area. In addition to these the only significant natural freshwater lake in Ghana is Lake Bosomtwi situated about 30 km south - east of Kumasi. The total water available from surface water sources is 39.4 billion m3 per year (GoG, 2007).

The main consumptive uses of water are water supply, irrigation and livestock watering. On the basis of surface water resources alone, the consumptive water demand for 2020 has been projected to be some 12% of the total surface water resources (AICD, 2010). The main non - consumptive uses are inland fisheries, water transport and hydropower generation. Impoundments and reservoirs have been constructed for hydropower generation, potable water supply and irrigation.

According to GSS (2012), 46.5% of households use pipe-borne water as their main source of drinking water while 29.1% use borehole or protected well. Furthermore, 9.4% rely on sachet or bottled water. About one-tenth (10.6%) of households depend

on surface water such as rivers, streams, dams, canals and ponds for drinking. Less than one percent (0.7%) of households depend on rainwater for drinking purposes. Figure 3.1 is a summary of main sources of drinking water.

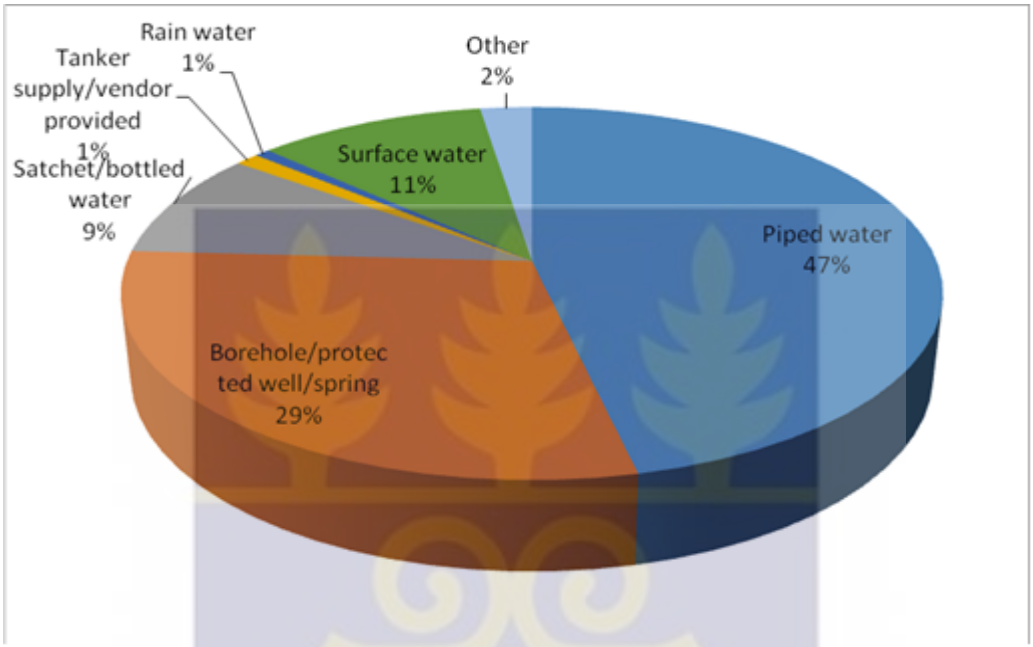


Figure 3.3: Main sources of drinking water (GSS, 2012).

Greater Accra (64.4%), Central (53.5%) and Ashanti (50.8%) are the regions where more than half of households have access to pipe-borne water. With the exception of Greater Accra where sachet water (28.0%) is second after pipe-borne water, the use of protected wells and boreholes as an alternate source of good drinking water is common in all regions.

3.3 Water Sector Development in Ghana

A lot of efforts are being made for water sector reform and development. The water sector in Ghana has a very long history that traces back to pre-independence. In this section, there are about three sub-sections; pre GWSC and GWSC era, post GWSC and the structure of CWSA.

3.3.1 Pre GWSC Era (1928-65)

The development of public water supply in Ghana began in 1928 in Cape Coast. From 1928 to 2000s, a lot of transformation has been done. For example between 1928 and 1948, water supply delivery was under the Public Works Department followed by the Hydraulics Department (HD) of which the Public Works Department (PWD) that was responsible for urban water supply. In 1948 a Rural Water Department (RWD) was created within the PWD to deal with rural water supply. In 1958, the Hydraulics Department and the Rural Water Department were merged into the Water Supply Division (WSD) of the PWD with responsibility for both urban and rural water supply. Therefore from 1928 to 1958 water supply delivery was under the central government. During that era water supply delivery was not commercialized. It was highly considered as an equitable social service.

Between 1959 and 1965, the water sector in Ghana was a transition era of institutional transformation for improvement of water services delivery. It is stated that the severe water shortage problems in 1959 influenced the Government of Ghana (GoG) to appeal to the World Health Organization (WHO) to assess the water supply situation in Ghana. The response to that appeal to the WHO led to the creation of GWSC that was established in 1965 under Act 310, from the WSD. The GWSC was given a mandate for the provision, distribution, management and conservation of both urban and rural water supply for public, domestic and industrial purposes in the country. Most of the water supply systems were relied on surface water sources and were using conventional treatment systems.

3.3.2 GWSC Era (1965-1994)

The GWSC operated from 1965 to 1998. Since the establishment of GWSC, water supply delivery was focused more on the urban water systems at the expense of the rural water supply (Nyarko, 2007). In 1986 the first attempt to enhance service delivery in the rural areas that are communities with less than five thousand (5000) inhabitants was initiated with the establishment of the rural water department within the GWSC (Asamoah, 1998). The approach of providing rural water services by the rural water department was a supply driven approach. It was believed that the supply-driven approach was a suitable approach for a government to deliver social services to her citizens. So community involvement was not a condition for implementation of any water supply delivery.

GWSC focused more on urban population than rural population. For example less than 50 or 1% out of 4500 GWSC staff were responsible for rural water supply and were maintaining about 6,600-drilled wells by GWSC, while the urban and rural population was between 30-35% and 65-70% of the Ghanaian population respectively. As argued by Nyarko (2007, p. 44),

> That sufficient attention was not devoted to rural water sector under GWSC era. The responsiveness of GWSC to customer concerns in rural areas was poor and there was no involvement of the rural communities in the water supply delivery and therefore did not have any sense of ownership, which affected sustainability of the water facilities.

In 1994, the rural water department of GWSC was converted into a semi-autonomous department known as Community Water and Sanitation Department. During the period, GWSC changed its strategy whereby strategic decisions were centralized to the head office and the regional offices responsible for operations. At that time, user fees were small compared to the operational and capital expenditure. GWSC was

therefore receiving annual budgetary allocation from the government for capital expenditure, operation and maintenance expenditure until 1989 when government decided to withdraw subsidies for recurrent expenditure. The GWSC era marked the beginning of increasing the autonomy of the utility by making it a corporation with Board of Directors. Commercial orientation also increased even though the objective of ensuring cost recovery from the user fee was not achieved. Thus the government continued to support the CWSC through budgetary allocation and subsidies

The water supply in rural and small towns started attracting attention by the 1990s when the International Drinking Water Supply and Sanitation Decade (1981-1990) was launched. The review of the challenges that militated against meeting the water supply target within the Water Decade in the early 1990s was the point when water supply to small towns/peri-urban began to gain attention. At that era there was a significant external support in water supply delivery globally and in Ghana. During that time a number of water supply facilities were provided but at the end of the decade a significant percentage became non-functional. However, many of the water supply facilities were driven by World Bank and donor countries were significantly in line with community participation conditions. The review of the challenges that militated against meeting the water supply target within the Water Decade in 1980s was the point for the ministry responsible for water, the Ministry of Works and Housing (MWH) and the ESAs to discuss the provision and sustainability of rural water supply and sanitation. The outcome of the discussion gave birth to the National NCWSP, which aims at accomplishing the following objectives:

- To provide basic water and sanitation services to communities that will contribute towards the capital cost of the water facilities and pay the normal operations, maintenance and repair cost of their facilities.

- To ensure sustainability of these facilities through community ownership and management, community decision-making in their design, active involvement of women at all stages in the project, private sector provision of goods and services and public sector promotion and support.
- To maximize health benefits by integrating water sanitation and hygiene education (Asamoah, 1998).

As part of the water sector reform, the urban and rural water supply systems were separated in 1994. The provision of water supply and sanitation services to rural and small towns was decentralized to the District Assemblies (DAs). The rural water division of GWSC was transformed into a semi-autonomous department known as the Community Water and Sanitation Department (CWSD) with the responsibility of implementing the NCWSP.

3.3.3 Post GWSC Era

In 1998, the Community Water and Sanitation Department (CWSD) was further transformed into an autonomous agency, the CWSA by Act 564 of 1998 to facilitate the provision of safe drinking water and sanitation services to rural and small towns. CWSA has a mandate to facilitate the development, operations and maintenance of the community water supply systems. Moreover CWSA has been providing technical assistance, formulating policies on community water and sanitation activities as well as monitoring and evaluating projects.

In the same year GWSC was converted into a limited liability company, the GWCL with the responsibility for urban water supply as part of the water supply sector reforms. The World Bank prompted the government that the urban water supply should be operated on commercial principles through private sector participation. The

reform of GWSC had three components. This first component of the restructuring led to the following structures:

- GWCL – Public utility for the production, supply, operations and maintenance of urban water supply.
- CWSA – Government agency responsible for facilitating community water supply and sanitation.
- District Assemblies: Local authority responsible for the provision of infrastructure including sanitation and community water supply.
- Communities Service Provision (Operations) and maintenance of Water Supply.

The second component of the restructuring focused on separation of service provision from regulatory functions to enhance efficiency and public accountability. It resulted in the establishment of the regulatory institutions in the water supply sector. These are the Public Utilities Regulatory Commission (PURC) for regulating tariffs of urban utilities, Water Resources Commission (WRC) for regulation and management of water resources. The final component of the restructuring aimed at establishing Private Sector Participation (PSP) for urban water supply delivery in Ghana. The primary objectives of the water sector-restructuring programme were (Louis-Berger, 1998; Nyarko, 2007; PC Chan & Effah, 2013):

- To improve efficiency in production and extension through improved operation and maintenance, cost effectiveness and pricing strategy guided by commercial and social principles.
- To increase accessibility to water supply by expanding the supply of safe and clean water in urban and rural areas.
- To ensure sustainability of the water services through cost recovery and improved sector management.

- To ensure that low income and poor households have affordable access to safe water.
- To relieve GoG of the financial burden by accessing private capital.

3.4 Community Water Management Model and Other Service Providers

The literature indicates that the most common management models being adopted in small towns for water supply services in SSA countries are community management, contracted private operators, public utility and the local government management Depending on the socio-political systems in some countries, these management models are further classified, increasing the number of management models (Braimah, 2009). In Ghana, the community management model is most pronounced in rural and peri-urban areas.

Community-managed water systems with both piped (piped boreholes) and non-piped (protected wells, boreholes) distribution are common worldwide in both developed and developing countries (Harvey & Reed, 2007). The literature indicates that the most common management models being adopted in small towns/peri-urban for water supply services in Sub-Saharan African countries are community management, contracted private operators, public utility and the local government (authority). The literature indicate that the decisions to determine which management model is preferred or suitable for a particular country depends on the country water policy strategy, environment, financial capacity, nature of the community and the conditions of the implementing agency (Harvey & Reed, 2004). Table 3.3 is the summarized water management frameworks.

Table 3.3: Water management frameworks

Model	Regulator	Financer		Manager	Implementer	
		Facility	O&M		Facility	O&M
Public community management	National and local government	Donor, Government and community	Community and local Government	Local government and communit	Private sector/NGOs	Community/local government
Public Private Partnership	National and local government	Donor, Government and community	Private, community and local government	Private and local government	Private sector, local governmen	Private and local government
NGO management	National and local government	NGO	NGO	NGO	Private sector/NGO	NGO, community and private
NGO community model	National/local government	NGO and community	NGO and community	NGO and community	NGO, private sector	NGO, community and private

Source: Adapted from Harvey & Reed (2004).

Braimah and Franceys (2009) argue that in peri-urban areas where operators' revenues are unable to cover full supply cost, financial support is required if sustainable service delivery is attained. For successful community management, financial, managerial autonomy and competition incentives for expansion and management team should be contained in the legal, institutional framework, regulation and professional support provided by external agencies (Braimah, 2009). Figure 3.4 describes the successful management model.

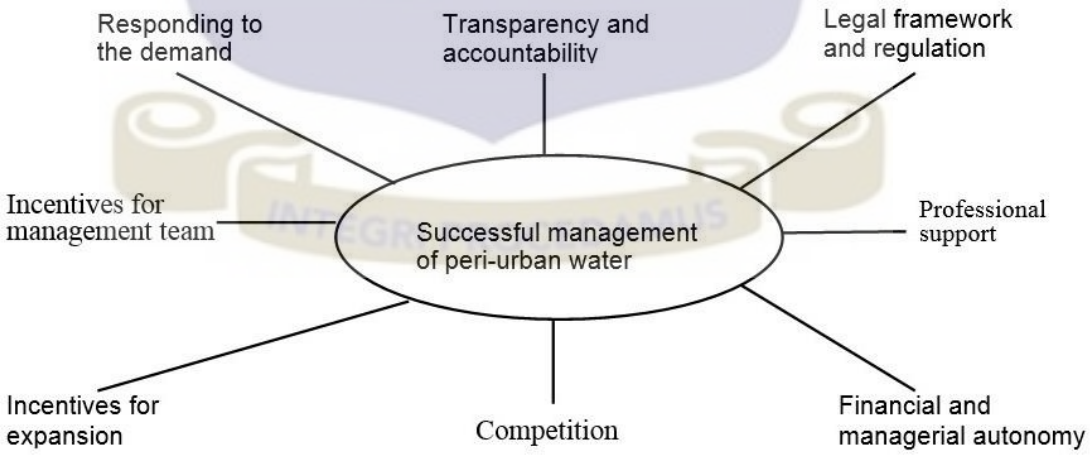


Figure 3.4: The ingredients for successful CBM in peri-urban water supply. Adopted from Braimah (2009).

As many aspects of community water management are often within the direct responsibility of the water supplier (the community), it is essential that a collaborative

multi-agency approach be adopted to ensure that agencies with responsibility for specific support within the water cycle are involved in the sustainable water management (Vernon, *et al*., 2005). Consultation with other authorities is generally necessary for other elements of community water management, such as advisory financial management and reporting requirements, emergency response plans and communication strategies (Isham & Kahokenen, 2002). Different water institutions have different roles and responsibilities. However, some responsibilities are interlinked. The extent of responsibilities of water sector institutions in drinking-water supply varies greatly from one country to another and within communities (Meinzen-Dick, 2007). However, the degree of responsibilities depends on the nature of the development projects and the funding.

The CBM of water and sanitation facilities are the result of a consistent advocacy by interest groups in the water and sanitation sector. This includes World Bank, other development partners and NGOs. It was revealed that central governments scarcely used funds generated from water systems to maintain, improve and expand the facilities. This to a large extent, contributed to the frequent breakdown of facilities. It was strongly advocated that any community-based management of peri-urban and or small town water system should be independent of the control of any government agency- the District Assembly, particularly, and be largely autonomous. However the most practiced is Public Community Management Model (PCMM). In this model, the local government acts as enabler and responsible for regulation, facilitation and monitoring of sector stakeholders. The local government can facilitate water supply through providing an environment in which stakeholders are able to operate with minimal constraints e.g. information provision, follow-up training and technical

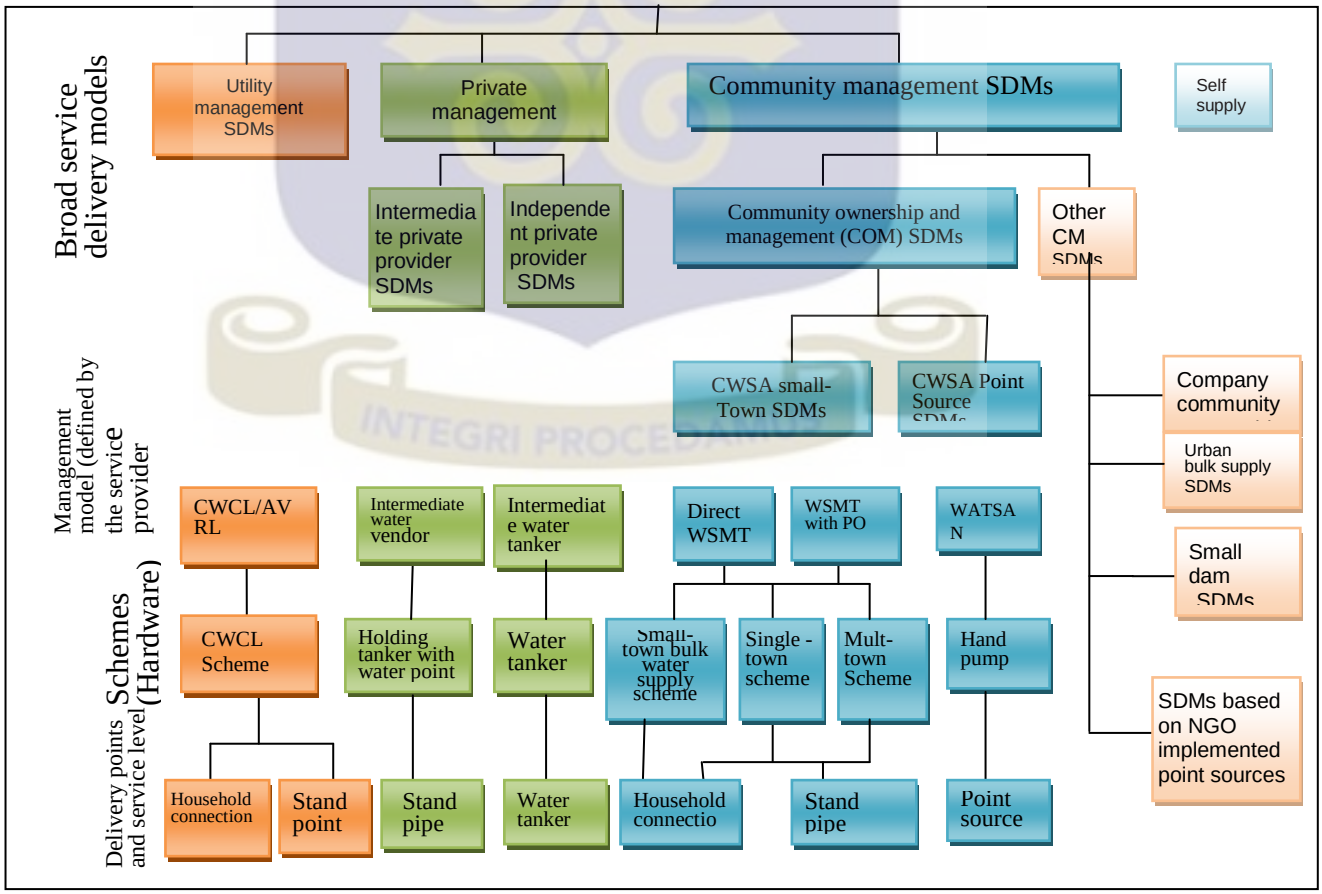
support. However, the community is not limited to contract private sector for providing training, supply spare parts and other technical issues.

The other model is known as Public-Private Partnership Management Model. This model is a bit different from the public community model. Here the private sector manages water services and collect revenue from the users who in effect finance the service for ongoing O&M costs. This model however requires the government's regular supervision and regulation. This is a typical model used in urban water supplies although many systems remain subsidized by the government. NGO Management Model is also recognized, this model is a variation on community management and Public Private Partnership (PPP) models based on implementing NGO and the community. In this model the NGO takes the lead role but has a strong partnership with the community and provides support for maintenance. The only critical constraint is that the sustainability of the system depends largely on continued provision of water service delivery by the NGO (Harvey & Reed, 2004).

3.5 Ghana Water Supply Delivery Model and Community-Based Water Management

In Ghana there are many water service delivery models. There are those recognized and unrecognized by water utilities. This study discusses only those models recognized by water utilities. The community management models are by far relatively the most common model approach adopted in Ghana. At a very local level, two management bodies can be distinguished such as Water and Sanitation Committees (WATSANs) being in charge of the daily operation and maintenance of either hand pumps or standpipes and WSMTs who manage water systems in small towns.

Local representatives are supposed to be elected by the respective water user groups. WATSAN committees are trained and advised by the DWSTs. It is understood that the five to seven members of the WSMT (with ideally 40 per cent women's involvement) contribute voluntary work (CWSA, 2004). WSMT members receive professional training to protect water resources, to manage the systems, to fix tariffs and to ensure regular water supply. Thereupon the WSMTs formulate by-laws, which are to be ratified by the DAs. The types of which model to exist in a particular community are determined by ownership and financing factor. The common type of community management models includes Public-Private- Partnership Model (PPPM), NGOs Model, and Public-Private–NGO-Partnership and Public-Community Management Model. Figure 3.5 describes some of the recognized service delivery models in Ghana.



Overview of Service delivery models (SDMs). (IRC and Aguaconsult, 2011).

It has been stated that community management model is the leading model in Ghana whereby about 34% is community-managed, 32% is managed through utility model and 20% of the service is from unimproved sources, 10% is delivered by self-supply model, while 4% is delivered by private models. Community management model (hand pumps and small towns' piped) is more practised in rural and peri-urban areas while utility model is seen in urban areas. Figure 3.6 illustrates the service delivery model.

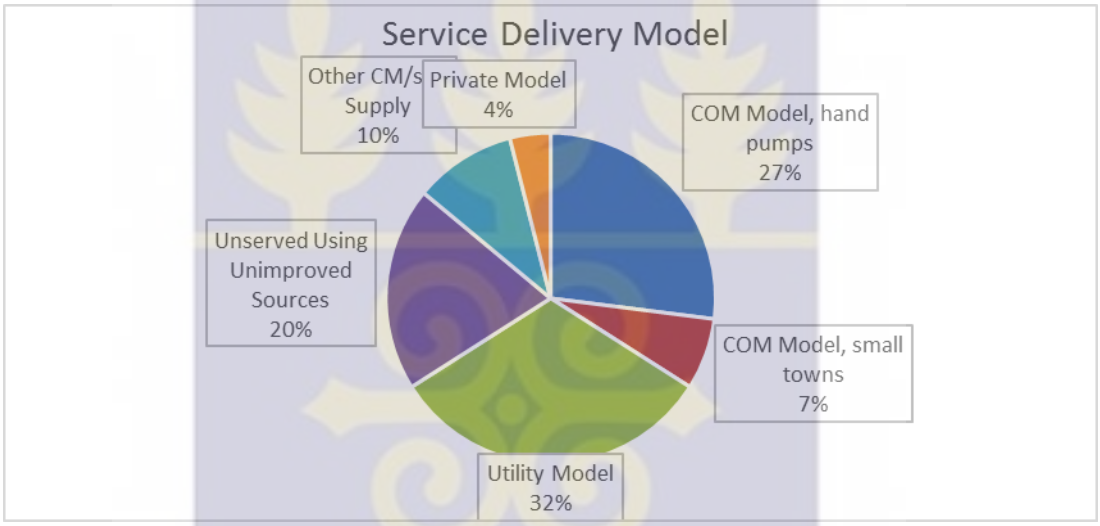


Figure 3.6: Percentage of service delivery model in Ghana,(IRC and Aguaconsult, (2011).

3.5.1 Mapping the Water Sector of Ghana: Institutions and Actors

In Ghana, there are a number of institutions and actors involved in water supply service delivery. Water supply service delivery cuts across in different ministries, departments and policies, NGOs, donors and private institutions. The relationship of water sectors institutions and actors is illustrated in Figure 3.7.

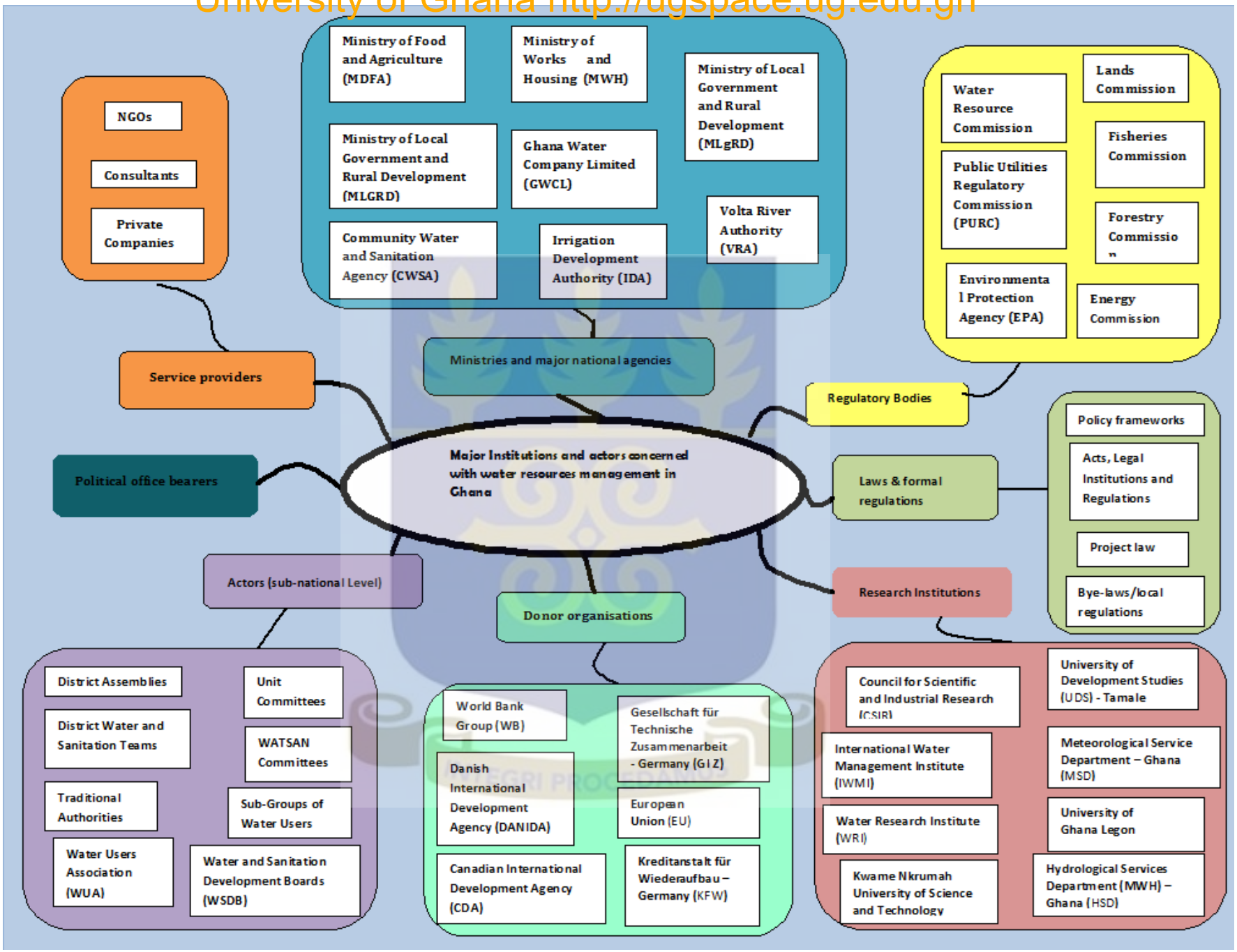


Figure 3.7: General water sector institutions and actors in Ghana

3.5.2 Water Sector Institutional Framework in Ghana for Domestic Use

Institutions are defined as "the formal and informal rules and practices that govern behaviour of different groups". It includes many different institutions, for example legal, authorities and regulations. The strength of the institutional capacity is its ability to affect rules and foster an environment of self-monitoring and enforcement. The institutions/organizations in water sector development are divided into those that are currently involved in the activity and those that are still being set up (Hodgson & Manus, 2006). In Ghana, the water sector institutional framework is mainly divided into three categories, thus: 1, sector leadership, 2, regulation and 3, service development and provision. Each institution has its roles and responsibilities. Figure 3.8 shows the categories and its level of function.

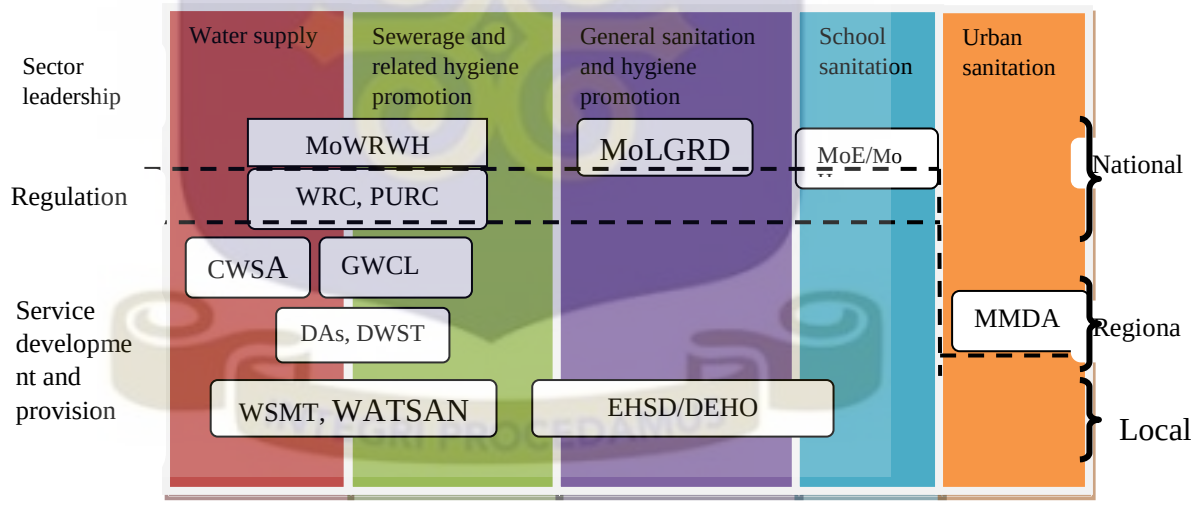


Figure 3.8: Ghana Water sector institutional Framework (GoG, 2010).

Ministry of Water Resources, Works and Housing (MoWRWH), Ministry of Local Government and Rural development (MoLGRD), Ministry of Education (MoE), MoH, WRC, and PURC operate at national level, while CWSA, GWCL, District Assemblies (DAs) and District Water and Sanitation Teams (DWST) operate at regional level. WSMTs, WATSAN and Environmental Health and Sanitation

Department (EHSD)/ District Environmental Health Officer (DEHO) perform their functions at the local level.

The primary responsibility for ensuring the sustainability, functionality and provision of quality and safe drinking water rests with District Assemblies (DAs). District Assemblies (DAs) have a legal responsibility to monitor the functionality and quality of drinking water provided to consumers, compare the results to national standards and communicate any health risks to consumers and appropriate authorities as described in the regulations to the Water Services Act (No. 108 of 1997) Compulsory National Standards for the Quality of Potable Water Act.

3.5.3 Water Resources Commissions

Alongside the provision and supply of water are the issues of water quality, sufficiency and continuity of supply. In the past, the government did not have a clearly articulated policy for the water sector as a whole, until the establishment of Water Resources Commission in 1996 where the wider water issues, including those relating to rivers, allocation of scarce supplies and pollution received necessary attention (WaterAid, 2005). Increased number of independent water supply systems, including community-managed system has contributed to the establishment of Water Resources Commission. In Ghana, water supply is classified into two approach service delivery as Community Water Supply (CWS) and Urban Water Supply (UWS). Community Water Supply (CWS) is being facilitated or managed by CWSA, while UWS is facilitated by GWCL.

3.5.4 Community Water and Sanitation Agency

Institutional arrangement of community-managed systems the CWSA is a government body with the responsibility of facilitating access to community water supply. Community water supply delivery is based on the community's demand and willingness to pay for the water services (CWSA, 2003). The District Assemblies are the local government authorities with the responsibility of implementing water supply within their districts. The District Assembly Act (Act 462) of 1993 gives the Assembly the power to delegate functions other than legislative. In accordance with this provision, the District Assembly has delegated the water supply management function to the WSMT.

The WSMT, which is composed of elected community (small towns/peri-urban) members, is responsible for the management of the small towns' water supply system. Consequently, the WSMT is responsible for hiring or appointing operational staff, promoting and disseminating information within the community, and ensuring that all community members participate in decision-making (CWSA & Trend, 2007). The WSMT also ensures proper financial management, hygiene education and sanitation promotion. Financing and cost recovery policy and funding for capital investment for the community-managed piped systems is from the Government of Ghana (GoG), ESAs and communities. The GoG and the ESAs provide 95% of the capital cost while the communities contribute 5% of the capital cost of the water system. The policy indicates that, after the initial community contribution, water tariffs should cover operations and maintenance, major repairs, replacements and extension to new areas (CWSA, 2003).

3.5.5 The National Water Policy

In an attempt to complement earlier efforts, the new National Water Policy came into effect in February 2008 and focuses on three strategic areas: water resource management; urban water supply; and community water and sanitation. Ghana National Water Policy is guided by principles that play a crucial role especially in providing support, co-ordination, regulation and decentralization. There is institutional framework and model that are used for services delivery. NAWAPO has a crucial significant impact on sustainability of water supply in various ways. Those impacts can be direct, indirect, intentional or otherwise to sustainable water supply. The NAWAPO is generally influenced by the International Monetary Fund (IMF) and the World Bank. The policy among others promotes:

- Decentralization and civil service reform
- Privatization
- Economic liberalization and free trade
- Poverty reduction and
- Government co-ordination of donors and NGOs

Ghana does not have a specific policy for community management of water systems and hand-pump standardization as like in other Sub-Saharan African countries, thus these issues are sub-set in the NAWAPO (GoG, 2007). The NPRSP has been developed through a participatory process involving civil society and development partners, IMF and WB, for example. Water and sanitation is among key issues addressed, strategized and incorporated into NPRSP by: providing guidance on analysis of the linkages between poverty, water and sanitation, assisting in identifying problem areas that require intervention and in defining objectives, providing a menu of possible public interventions, and a framework that assists prioritization and lastly,

assisting in defining a monitoring and evaluation framework that allows re-evaluation of the linkages, appraisal of poverty outcomes, and assessment of whether the chosen intervention has been effective (GoG, 2007).

3.6 Financing Community Water Services

In many lower and middle-income countries, community contributions barely cover operation and minor maintenance costs (Moriarty *et al*., 2010). For the case of Ghana, community contributions cover operations, regular maintenance and other related costs. The government through the District Assembly can provide support for high cost replacement, renewal and extension. The by-laws developed by the Ministry of Local Government and Rural Development (MLGRD, 2008) do not set tariff levels that include capital maintenance costs. But the by-laws require that all WSMTs operate three separate accounts: the operational account, the sanitation account (not less than 10% of net revenue after paying for all regular operations and maintenance) and the capital account (not less than 20% of net revenue). The capital account is to be used for major repairs, extensions and replacement of the water systems and not for routine operation and maintenance (Fonseca *et al.*, 2013).

The tariff-setting guidelines of the CWSA make provision for the replacement, rehabilitation and expansion of the water system, which is set at 25% of operational costs (CWSA, 2011). Operational costs are made up of water production, water distribution, routine maintenance, repair works, water quality monitoring and tariff collection expenses. In general, the guidelines stipulates as the Table 3.4 shown.

Table 3.4: Guidelines of (CWSA) in financing community water

S/N	Description	(%) of operation expenses
1	Operation, extension and rehabilitation cost	70
2	Investment and Replacement	20
3	Sanitation	10

Source: CWSA (2011)

The Community Water and Sanitation Agency guidelines for small towns state that rehabilitation is the responsibility of the Water and Sanitation Management Teams while the Metropolitan, Municipal, and District Assemblies (MMDAs) are responsible for system expansion (CWSA, 2010). The costs of capital maintenance and extension of small-town water schemes have been financed from the WSMTs' capital accounts, MMDAs, central government, external donors and pool funding. When actual expenditure needs for capital maintenance are very high, MMDAs, central government and/or donors can step in to fill the gap. However, this causes a long short fall for breakdown as the decision to solicit and release the fund involved bureaucratic process and it takes long time.

3.7 Institutional Management Gap and Water Service Ladder indicators in Community Water Supply

There is definition gap of 'peri-urban', however, in most cases is defined by using administration and population size. In Ghana, the definition of peri-urban areas falls between the urban and rural definitions, thus creating a challenge for the sector, whether these areas should be under GWCL or CWSA. Small towns are administered by the DA; hence it is the responsibility of the DA to support water delivery to those communities. Many of peri-urban areas are similar to small towns, but are not formally defined as such. Thus many peri-urban areas are supposed to be served by GWCL but are not because the utility has not been able to extend its networks to them. Partly as a result of these institutional gaps and partly as a result of generally slow progress in extending water services. Therefore peri-urban communities are served by both institutions (GoG, 2007). So far a number of other formal and informal

actors have emerged to fill the demand, broadly referred to as Small-Scale Providers (SSPs[13]) (IRC & Aguaconsult, 2011).

The NAWAPO, (GoG, 2007, p.64) defines a small town as "a community that is not rural but is a small urban community, with a population between 2,000 and 30,000 that has been mandated by the relevant authorities to manage its own water and sanitation systems". The determination to whether a small town is 'rural' or 'urban' has been dominated by a political decision. The confusion of mandates for small towns is not the only area where there is lack of clarity in terms of institutional responsibilities. In principle, peri-urban areas are supposed to be served by CWSA as it follows under the small town's characteristics. Since the population criteria used to distinguish between rural, small towns and urban changes over time, it is difficult after a time to determine which utility should serve such areas. For example, the population of area X today is 20,000. The same area after ten years the population may be more than 50,000 people. The status of the area changes as it grows but in practice neither CWSA has handed over the system to GWCL nor GWCL has taken over the system as the status change. The NAWAPO stated that "There shall however be definite guidelines for small towns that may wish to exit from urban water management or enter into community-managed arrangements and vice versa. This is to ensure harmonization in sector planning, proper targeting of subsidies and clear definition of roles of GWCL and CWSA/District Assemblies", (NAWAPO, 2007, p.56). Therefore there is a transitional and management gap on peri-urban continuum. Figure 3.9 illustrates the water management gap.

[13] **SPPs** it includes water tanker operators in small scale independent producers and domestic vendors especially in the urban and peri-urban areas

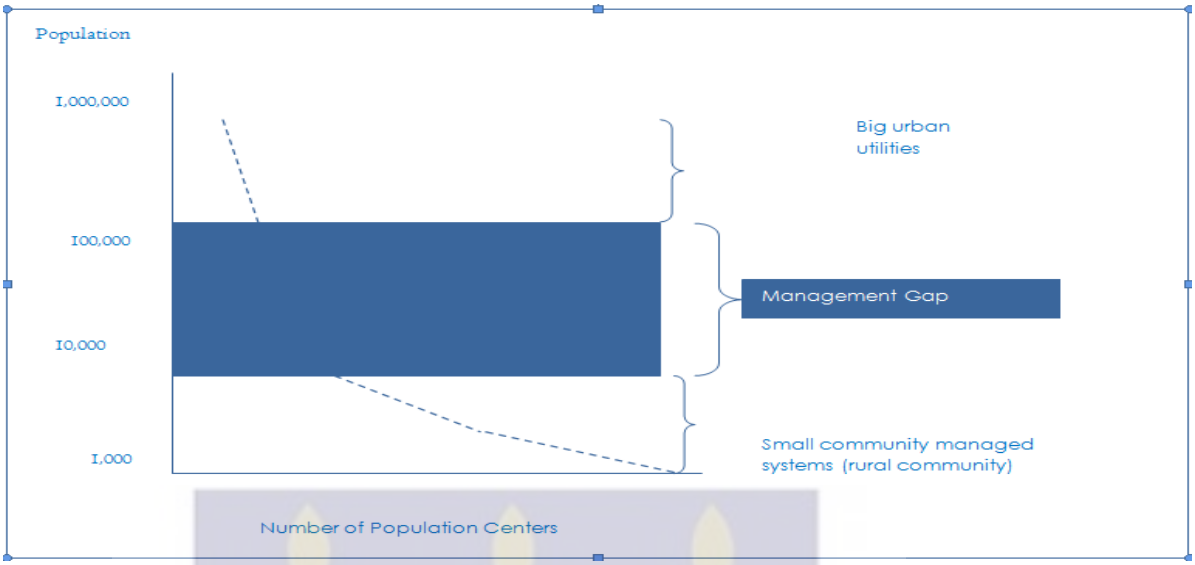


Figure 3.9: Water Sector Management Gap, Adapted from Hopkins & Richard (2003).

In Ghana, community water supply management was introduced in the early 1990s (Asante *et al.*, 2002). The 1990's Ghana water sector marked the era of a gradual shift towards Community Ownership and Management (COM) with the realization that a purely supply-driven approach in a largely informal economy with limited tax revenue generation was unsustainable, alternatively community ownership systems such as COM had more promise for sustainability of the systems (Duti, 2011). From 1994, The World Bank supported the Government of Ghana for the implementation of the participatory planning and implementation programme. Participatory planning at community level, demand for services and the need for community contribution to capital cost were introduced. Under COM arrangement, communities were made responsible to cater for full cost of Operation and Maintenance.

In many rural areas, water supply systems are controlled by the WATSANs. Water and Sanitation Committees are committees set up around one point source, such as a hand pump. The formation of community water committees that are responsible for setting water user fees/tariffs (in consultation with the community and with the final approval from the DA), maintain accounts, and manage day-to-day operations of the

water points. The WATSANs contract an area mechanic, who is usually a trained local artisan to make minor repairs when necessary, and a pump caretaker, also a trained local, to undertake day-to-day operations and maintenance of the hand pump and collection of tariffs.

In Ghana, the CWSA has set high, intermediate, basic, sub-standard and no service for water service provision. The basic service level for hand-pumps and standpipes is defined as 20 litres per capita per day of drinking quality water; no more than 300 people per borehole or standpipe, or 150 for a hand dug well; less than 500m to a water point; Ghana Standards Board water quality standards; and reliability of 95% throughout the year. Table 3.5 shows Ghana service ladder based on the standards set by CWSA in its design guidelines (CWSA, 2010a: CWSA 2010d) and legislative instrument (CWSA, forthcoming).

Table 3.5: Ghana water service ladder indicators

Service Level	Description
High service	People access a minimum of 60 lpcd of high quality water on demand. Reliability is 95% (CWSA household connection standard).
Intermediate service:	People access a minimum of 40 lpcd of acceptable quality water (in accordance with the standards set by the Ghana Standard Board) from an improved source, at a distance less than 500m. The number of people using the hand pump is 300 in the case of a borehole and 150 in the case of a hand dug well and reliability is 95%
Basic service (Benchmark):	People access a minimum of 20 lpcd of acceptable quality water (Ghana national standards) from an improved source, at a distance no more than 500m. The number of people using the hand pump is 300 in the case of a borehole and 150 in the case of a hand dug well and reliability is 95% (CWSA hand pump and standpipe standard)
Sub-standard Service	People access service that is an improvement on having no service at all, but that fails to meet the basic standards on one or more criteria (quantity, quality, reliability, distance, max number of people served)
No service	People access water from insecure or unimproved sources or from a service that does not meet any of the criteria (quantity, quality, reliability, distance, max number of people served)

Source: CWSA (2010)

Notes: lpcd (litres per capita per day).

The service ladder indicators guideline has been developed to assist water sector stakeholders in Ghana to undertake water service monitoring in the community water sub-sector. The frameworks outlined indicators for sustainable rural and small town's water systems from high service to no service level.

3.8 Conclusion

It is evident from the Ladder of Citizen of Participation that local community participation in community-managed water system as it relates to development is a process that includes a set of activities and takes place through different stages. From this set of activities and collective responsibilities, the ideal role for government is to facilitate social and environmental sustainability through a mix of re-distributive and

procedural forms of power. In practice, it means that community workers and policy-makers should look for an alternative approaches and strategies to empower communities through participation which can be a way to entice self-reliance for their development projects. The roles of water sector institutions are also crucial for sustainability of peri-urban community-managed water systems. Theoretically and conceptually, local community participation in peri-urban community-based water supply may be achieved through involving them and granting power to enhance sustainability. However, practically, the outcome does not guarantee project sustainability. The use of sources of drinking water in peri-urban areas has also changed the unprotected sources of water in the AOT areas can no longer be used for domestic purposes as used as to be of some years ago. It is in this plight, AOT communities have changed their behaviour on water and water sources use.

CHAPTER FOUR: RESEARCH METHODOLOGY

4.1 Introduction

This chapter describes the methodology used to explore how local participation and water institutions affect the sustainability of peri-urban community-managed water supply systems. It includes the philosophical perspectives, research design, sampling procedures and data collection methods. The chapter also includes discussion of validity and reliability as well as the ethical considerations in accordance with the required research methodological procedures.

4.2 Research Paradigm and Design

Paradigm is defined as the set of beliefs and philosophical assumptions about the nature of reality and the ways to know that reality (Nieuwenhuis, 2007). Philosophical issues are essential in the research process because they shape the researcher's understanding about the nature and approaches of a study that they wish to conduct (Scott & Usher, 2011). Thus, there are different paradigms such as positivism and interpretive or social constructivism (Scotland, 2012). In many cases, realists employ the objectivism approach which is based on the ability to know things as they really are and believing that the real world should be discussed by means of a systematic, interactive methodological approach and that knowledge arises from observation and interpretation (Schwandt, Lincoln & Guba2007).

While positivism assumes that the world is objective and the validity of knowledge claims are about observable and measurable phenomena, the interpretive paradigm believes that reality is socially constructed (Scott & Usher, 2011). This study employs both approaches in the research design. While positivists claim to employ quantitative approaches like survey and experiments, social constructivists claim to employ

qualitative ones like phenomenology, case studies and ethnography (Creswell, 2012). In this case both quantitative and qualitative data were used to provide the best understanding of the problem.

Research design serves as a framework to collect and analyse data (Bryman, 2007). Adopting a mixed method, this research involved a combination of designs such as survey and the phenomenological approach. Survey was used to gather factual information at individual household level. The researcher employed in-depth interviews to explore the breadth and depth about the processes and activities through local community participation and management of the community-managed water supply system. The purpose was to provide information that best explains the relationship and the impact of local community participation on sustainable community-managed water facility.

Phenomenology is concerned with the study of experience from the perspective of the individual and usual ways of perceiving. It is based on a paradigm of personal knowledge and subjectivity and emphasizes the importance of personal perspective and interpretation (Lester, 1999). Phenomenological methods are particularly effective at bringing together the experiences and perceptions of individuals, structural or normative assumptions from their own perspectives. The researcher employed these methods so as to gather information and the historical background of COM and also, whether to accept or reject the assumptions made by project financers, government and other stakeholders that COM lead to sustainable community water system facilities.

Recognizing that there are different ways in which mixed research can be conducted, the researcher employed sequential procedures starting with qualitative data for

exploratory purposes and followed up with quantitative method (Creswell, 2012). However, in some instances these two processes were not mutually exclusive in terms of time differences. This was caused by the fact that after conducting interviews and after some initial analyses, it became necessary to gather more information from some respondents.

4.3 Sampling of the Study Population and Determining the Sample Size

In this research, the sample includes different groups of people who were interviewed for both quantitative and qualitative data. Random multi-stage sampling was applied for the quantitative data collection while the qualitative was mainly based on purposeful and snowball sampling approaches.

The study was conducted in three different communities with different population sizes; hence Stratified Random Sampling (SRS) was applied. The determination of sample size was based on population representation ratio of the three communities. For the purpose of this study, Cochran's (1977) sample size formula for both continuous and categorical data was applied. Cochran (1977) developed a table of sample size determination as presented in Table 4.1. The study population had about 6300 beneficiaries and many of the questions were categorical, so 260 sample size was selected from 6000 as per Cochran's (1977) principle as highlighted in Table 4.1. The Cochran's formula as presented is applicable only if the margin of error is appropriate with the specific study. Therefore, the margin of error of the study is appropriate with Cochran's (1977) principle.

Table 4.1: Determining Minimum Returned Sample Size for a Given Population Size for Continuous and Categorical Data

Population size	**Sample size**					
	Continuous data (margin of error=.03)			**Categorical data (margin of error=.05)**		
	alpha=.10 t=1.65	alpha=.05 t=1.96	alpha=.01 t=2.58	p=.50 t=1.65	p=.50 t=1.96	p=.50 t=2.58
100	46	55	68	74	80	87
200	59	75	102	116	132	154
300	65	85	123	143	169	207
400	69	92	137	162	196	250
500	72	96	147	176	218	286
600	73	100	155	187	235	316
700	75	102	161	196	249	341
800	76	104	166	203	260	363
900	76	105	170	209	270	382
1,000	77	106	173	213	278	399
1,500	79	110	183	230	306	461
2,000	83	112	189	239	323	499
4,000	83	119	198	254	351	570
6,000	83	119	209	259	362	598
8,000	83	119	209	262	367	613
10,000	83	119	209	264	370	623
NOTE: The margins of error used in the table were .03 for continuous data and .05 for categorical data.						

Source: Kotrlik & Higgins (2001)

The sample size was determined by applying Cochran's equation as follows:

$$n_{0=}\frac{z^2pq}{e^2} \qquad \ldots\ldots\ldots\ldots\ldots (1)$$

Where, n_0 is the sample size, z is the selected critical value of desired confidence level, p is the estimated proportion of an attribute that is present in the population, q=1-p and e is the desired level of precision. The sample size was calculated at 95% confidence level with margin of error equal to (0.05).

z=1.65, p= $0.5, q = (1 - 0.5), e = 005$

$n_{0=}$272.25

The population of the study area as per (2010) census was around 6000 people

The application of Cochran's formula for calculating sample size when population size is finite

$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Here, n is the sample size, $n_{0=}$ is the sample size derived from equation (1) and N is the population size. N= 6000

$$n = \frac{272.25}{1 + \frac{272.25 - 1)}{6000}}$$

n=260.4743871≈ 260

4.4 Quantitative Sampling Procedure (Stratified Random Sampling)

At the community level of the study area, namely Abokobi, Oyarifa and Teiman, the sample included community members who are private household subscribers and non-household subscribers using the community water supply system. However, although the WATSAN members participated in household survey they were not included for in-depth interviews.

Stratified Random Sampling techniques were also applied. In the application of SRS three steps were followed: first, identifying the beneficiary population for the three communities (Abokobi, Oyarifa and Teiman); second, identifying the list of private household water subscribers and non-household water subscribers at each community and thirdly, identifying a number of public standpipe points in each community. The community using public standpipe points were determined by Ghana Standards Authority (GSA) principle that each standpipe point should serve at least 300 people. Figure 4.1 illustrates the steps used for SRS.

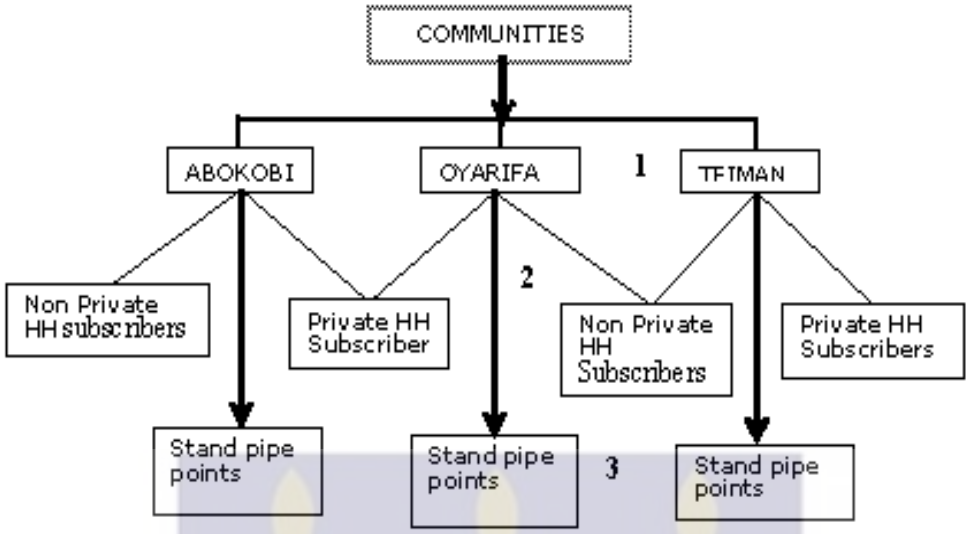


Figure 4.1: Three steps for SRS used in this study (Author's construct, 2014).

After the steps above, a proportionate number of households, according to the population size within each community and stratum for both subscribers and non-households subscribers were randomly selected. Table 4.2 below describes the number of households connected subscribers and non-household connected subscribers. It also shows the sample size selected in each community.

Table 4.2: Categorization of SRS stratum and sample size

S/N	Communities	Household connected subscribers	No of stand pipe @ 300*	No of people served-stand pipe	Sample size	
					Household connected	Non-connected
1	Abokobi	115	8	2400	5	85
2	Teiman	231	4	1200	10	42
3	Oyarifa	544	9	2700	22	95
TOTAL		**890**	**21**	**6300**	**37**	**222**
Sample size					**259**	

Source: Author's construct, 2013.

4.5 Qualitative Sampling Procedure

At the administrative level, the sample included key informants such as project leaders (WATSANs and WSMT members), community leaders-local government

officials (Assembly person) staff from NGOs (2=stakeholders sampling, 2=District Assemblies and 3=Assembly members). Purposive and snowball sampling were employed so as to understand the central tendency in local community perception and their attitude towards participation in the public provision of social services.

4.5.1 Purposive and Snowball Sampling

In collecting qualitative data, the samples are likely to be chosen in a deliberate manner known as purposive sampling. Bernard (2006) argues that with purposive sampling 'you decide the purpose you want informants or communities to serve, and you go out to find some'. The goal or purpose for selecting the specific study units is to have those that will yield the most relevant and plentiful data, given your topic of study. Equally important, the selection of these units should seek to "obtain the broadest range of information and perspectives on the subject of study" (Kuzel, 1992, p. 37). Of high priority in this regard, these units should include those that might offer contrary evidence or views, especially given the need for testing rival explanations (pp. 37-41). For instance, when selecting participants, you should deliberately interview some people whom you suspect might hold different views related to your topic of study. Most of all, you want to avoid biasing your study or any appearance of bias by choosing only those sources that confirm your own preconceptions. It is in this plight the researcher careful screened the list of institutions dealing with water issues. The researcher identified the following factors as a basis for selection: 1) the institution should have been in place for not less than 10 years, 2) it should be working with rural or peri-urban communities and 3) it should have been worked with AOT community water project. Based on these factors 5 institutions were purposively selected and then the researcher decided to find out

from the people the selected institution who were willing to provide the information by virtue of knowledge and experience

As stated by Noy (2008), snowball sampling was used to identify other potential key informants. Snowballing is useful if it is purposeful, not done out of convenience. For instance, in the course of an interview you might learn about other agencies or persons who can be interviewed. The snowballing occurs when you follow such a lead and let those new ones result in identifying yet other possible interviewees. The snowballing procedure can be followed, only if you take the time beforehand to think about your reasons for choosing the subsequent interview(s). Referral chain was applied, however, independent verification and screening was done after every two different referral chain. The first respondent was suggested by a CWSA officer. The sampling frame included government agencies, District Assembly and NGOs working in water sector and the entire community. The sampling process and gathering information were extended to different stakeholders as shown in Table 4.3.

Table 4.3: List of institutions and the number of interviews

S/N	Water Sector	Institution		Person Interviewed
1	Government Agencies (MWRWH)	CWSA	1	Greater Accra Regional Extension Officer
			2	Greater Accra Regional Water Engineer
2	MLGRD	District Assembly (DA)	1	Community Development Officer
			2	District Water Engineer
3	Community Representative (WSMT level)	WSMT	1	System Manager Abokobi
			2	System Manager Oyibi
			3	WSMT Secretary
			4	WSMT Chairman
			5	Staff Accountant
			6	Administrator
4	Community Representative	WATSAN	1	WATSAN Chairman-Abokobi
			2	WATSAN member Oyarifa
			3	WATSAN member Teiman
5	NGOs	PRONET	1	Director (PRONET)
		SAFE WATER	2	Chief Executive Officer
		Ghana WASH	3	Field Officer
6	Private Sector	Maple Consult	1	Chief Executive Officer
7	Water Research Institutions	Water Research Institute (CSRB)	1	Water Research Officer
		Training and Research Network for Development (TREND)	2	Executive Director

Source: Compiled by researcher, 2014.

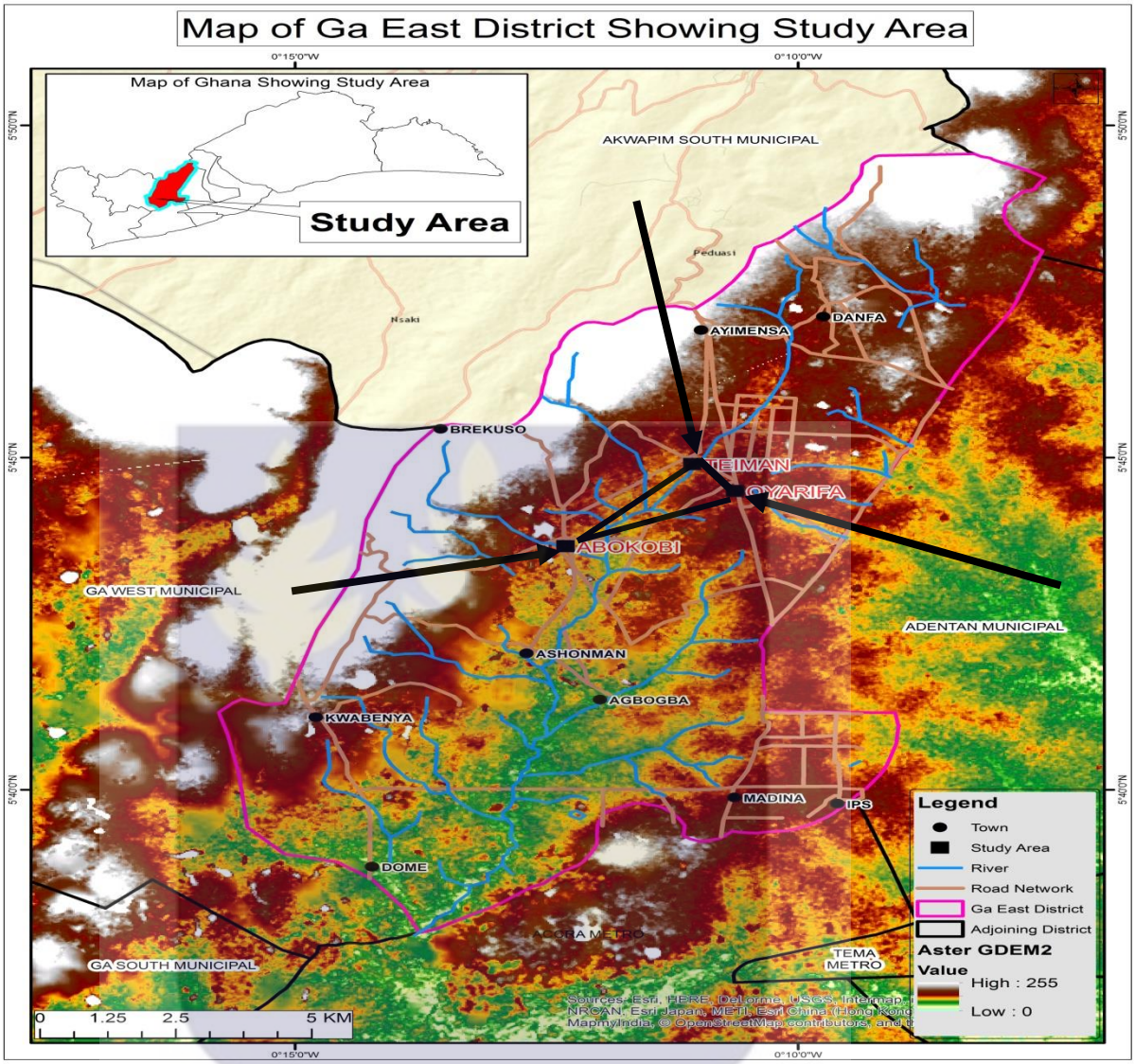
4.6 Study Site Selection and Description

The selection of the study site was based on three levels including: region, district and community level. Ghana, like other countries in SSA, is a "one-city state," and the single major city, also the territorial capital, often dominates such a country's political life. Almond and Coleman (1960) develop the argument that this circumstance permits concentration of political activity and administration in one place and thus facilitates the mobilization of political strength and concentration of population and city growth. City growth creates a high demand for social services delivery, especially water provision. The population density of the Greater Accra Region is higher than in any region of Ghana (1,236 persons per square kilometre), meanwhile the national

average is 103 persons per square kilometre (GSS, 2012). For this reason, Greater Accra Region was selected.

This study was conducted in the three peri-urban communities in Ga East District namely Abokobi, Oyarifa and Teiman. According to (GSS, 2012), the Ga East Municipal Assembly is very densely populated by 1,564 per square km. The peri-urban areas have been selected because the study propose to gather information about the impact of local participation and water institutions on the sustainability of community-managed water supply among a heterogeneous indigenous group of people, with highly differentiated levels of social, political and economic status. Apart from these differentiations, there are community-managed water supply projects funded by the government and non-governmental organizations that has incorporated local participation as a component. These projects have been in operation for an appreciable time period of not less than five years. Those areas have high demand of social services, caused by rapid urbanization and population increase. All the three communities are connected to one source of water, which is located at Abokobi. However, there is a variation between these three communities in terms of size and population but they share many common values.

Map 4.1: Map of Ga East Municipal Assembly Showing the Study Area



Source: Author's field computation, 2014.

4.6.1 Operationalization of Indicators for Sustainability of Community-Managed Water

The factors that are assumed to influence participation include indicators for local participation and the role of water sector institutions on sustainable community-managed water facility. Each factor has its own variables used to measure its authenticity. The following information were the basis to generate variables/indicators for this study: structure of the community, the local meanings and their perception

about participation in relation to water issues, scope and methodology of participation, the linkages between local participation and sustainability, the roles and responsibilities of water institutions to sustainable community water facility. Community structure looks at the general socio-cultural and economic factors that influence local meanings of participation especially in public goods or amenities. The following variables were generated: gender, local beliefs, and level of education, political and social factors, economic status, social networks, trust and availability of NGOs within the communities.

The level of local community participation is measured by the extent to which communities are involved in each stage of the project cycle. For the purpose of this study, a continuum of participation model developed by Rifkin and Pridmore (2001), respectively was adopted as shown in Figure 6.1. However, before this, it was important to understand what factors influence people's participation. To measure this, the following variables/indicators were generated: age, gender, education, ethnicity, socio-economic status, local beliefs, trust and social networks, demand for the service, political affiliation and religion.

The scope and process of participation also defines the existing facilities and mechanisms to ensure the practicability of agreed principles and activities, composition of gender, age and status. The sustainability of the water facility was measured by the social functionality rate and service delivered as specified by GSA-CWSA water supply principles. The following variables were employed in the test: quantity and quality, coverage and distance and reliability. Furthermore, the community's satisfaction with the service delivered was determined through accessibility and reliability, equitability, pressure rate, distance and time used to get to tap water, taste and colour, safety and cleanliness. Lastly, the support capital cost for

the facility (maintenance and rehabilitation, operation, harmonization of local community participation, support other community projects and facilitate technical experts and trainings for the facility staff) was used to determine water institutions' level of engagement and support for community-managed water supply facilities. Also, Likert's scale was adopted to measure community's satisfaction with the roles of water sector institutions. Water sector institutions were divided into three categories: government agencies (DA, CWSA), donors and NGOs (water research institutes and water supply service provider organizations) and private institution (water consulting firm).

In measuring the levels of local participation as argued by Berry *et al*., (1993) social sciences are also likely to apply breadth, depth and continuity. Breadth measures how many people participate, engage and how representative they are of the population. Depth deals with how a range of decisions influenced the final agreement for action, activity and policy decisions. Continuity defines the frequency of meetings and satisfaction with service delivery. Ethnicity and religion variables were included in the analysis so as to determine its influence on local participation, given the definition of peri-urban that there are a variety of ethnic groups.

4.7 Methods for Data Collection

The exercise of data collection was conducted between June and November 2013. Data and information were collected from three different levels namely household level, community level and agency level. Four research assistants were recruited for data collection; they were given an orientation through one day training before the pilot study and one day discussion after the pilot study. A total of twenty (20) questionnaires were used for the pilot study. The training and the discussion for

research assistants was meant to help them understand the nature of the research, themes and code of conduct which are important for a successful field research. The pilot study was so useful as it justified the relevance of the questions hence it informed the researcher to add, omit and adjust some questions so as to collect valid data. The total number of people included in the sample was supposed to be 259 respondents/households but 13 respondents did not complete the questionnaire so 246 sample size was used for analysis. Different methods were used to collect qualitative and quantitative information. These included household survey, in-depth interviews, conversations and non-participant observations.

During the qualitative data collection, the researcher conceptualized a mental framework for proceeding with the interviews. The questions reflected the protocol, but the actual wording and sequence of the spoken questions was customized to the specific interview situation. This helped me to present a neutral posture in collecting data to avoid bias. The appropriate use of protocol therefore should encourage a fairer inquiry. The researcher was also aware that he needed to maintain an open mind during the data collection process. Thus, in spite of having the protocol the researcher made sure that think "outside the box" (in this case, outside of the entire mental framework) when unexpected evidence is encountered.

4.7.1 Questionnaire Design and Household Survey

The first part of the questionnaire asked about the background and basic socio-economic information about the respondent and their households. Besides the community residence variable, it is these socio-economic variables that permit more in-depth analysis of the data. The variables in this section included age, marital status, gender and religion, number of years of the residence, level of education and

ethnicity. Furthermore, employment category, occupation, sources of income, demand of the service and household size variables were also included. Secondly, part of the questionnaire was anchored on questions on general familiarity with water sources and local community understanding and perceptions of local meanings of participation in relation to water. Some of variables generated on this section included local beliefs, level of education, political party affiliation, social and economic statuses, trust and availability of other NGOs.

Thirdly, the questionnaire gauges the respondent's information about his/her scope and level of participation and management in the community-managed water facility. The following variables were included participation, need of the facility, planning and decision-making, implementation and monitoring, and operation and maintenance. Furthermore, the questionnaire captured respondents' views and their experiences on the relationship between local participation and sustainability of the water facility. The final part of the questionnaire was about the roles and responsibilities of water institutions in the peri-urban community-managed water supply system. While the questionnaire was pre-tested with the four research assistants, a Stata Software expert was consulted to confirm the operationalization and measurement of the variables. Prior to the questionnaire circulation, the researcher received a letter of introduction from the department that introduced the researcher to the District Assembly where he was given permission to proceed with the research process. A copy of the introduction letter is attached in Appendix 1 of this report.

Social science researchers consider a household as the basic unit while economic decisions are treated as the outcome of the household rather than being treated as individual choices. This study defines a household as a person or a group of persons, who live together in the same house or compound and share the same house-keeping

arrangements. In general, a household consisted of a man, his wife, children and some relatives, other members and or a house help who may be living with them (GSS, 2012). Since water is a shared household commodity, using the household as a unit of analysis will serve the research objectives better. However, in Ghana, water collection and providing care is socially perceived as women's responsibility. This may also be due to the fact that in peri-urban communities, men are extremely busy in working to ensure the sustenance of the family and thus are seldom at home (Sullivan, 2000). Thus, the individuals interviewed from households were not necessarily heads of households but some were heads of their families.

Questionnaires were distributed and administered to three peri-urban areas, Abokobi, Oyarifa and Teiman. Structured questionnaires for household, community members (beneficiaries/users) and community leaders are often the commonest method to be applied to collect information about local participation and sustainability of community-managed water supply facility (Israel & Schulz, *et al*., 1998). Moreover, with the adoption of the theory of Ladder of Citizen Participation, the questionnaire was designed in a way that would capture useful data and information aimed at examining and determining how local community participation contributes to understanding and perceptions of local meanings of 'participation'.

4.7.2 Interview Guideline and Key informant Interviews

The researcher employed in-depth interviews to understand the perceptions and interpretation of people give to word 'participation' and the way they conduct activities related to the phenomenon under investigation (Aberbach & Rockman, 2002). Through in-depth interviews, the researcher was able to probe the experiences and perceptions of people towards the local participation process in the community-

managed water systems and the role of water sector institutions and actors for sustainable community water facilities. In selecting the key informants for the interview, the following characteristics were carefully considered: representative range, title and position, age, gender, influences, experiences and trainings, educational level, and community responsibilities. The selection aimed at reflecting the characteristics of the community water issues. Four different interview instruments were used for the specific institution. There was interview guideline for CWSA, NGOs and CBOs, WATSANs and the private sector.

The participants interviewed included community leaders and key community stakeholders including NGOs, officials of water research institutions and government agencies specifically those who are responsible for water sector management, community development, engineering and health. These participants interviewed were selected from the local community, local government and regional level agencies. Participants selected from NGOs were drawn from both local and national levels. About 21 in-depth interviews were conducted for all of the four categories and they were open ended questions but guided and arranged in sequential order.

4.7.3 Non Participant, Observation of Meetings and Document Analysis

Due to the fact that most agencies implementing community water supply projects convene meetings to plan and evaluate their projects, systematic assessment of the quality, supply, availability, reliability, access in local participation is critical. The researcher used Meeting Effectiveness Inventory (MEI) to rate the level of local participation in public meetings, balance of leadership between leaders and staff, cohesiveness, and quality of decision-making, and committee meetings (Goodman *et al.,* 1996). During the researcher's observation and critically minded in meetings

explored factors facilitating or hindering the effectiveness of local participation and gender ratio attendance. The researcher rated the observation/findings by ranking: high (quite a lot) ≥ 80%, intermediate (a lot) ≥ 60%, normative (not very much) ≥ 40% and poor ≤ 20. The gender attendance was measured by comparing between women and men, that is 50/50% or F = M (equal gender attendance), F > M [F>50%] (Female are more than male), and o F < M [F<50%] (Female are less than male).

Apart from the data obtained from questionnaires, interviews and observation, the researcher also analysed policies and documents related to community water systems. The study commenced with a thorough review of policy such as national water policy of 2007, CWSA policy of 2004, Act 564 and legal and institutional frameworks relating to water quality monitoring and management sustainability. The review specifically looked at community participation and sustainability frameworks. Frameworks relating to local governance and development were reviewed to identify the capacity of DAs in terms of human resources and financial capacity to support community water supply. Some other documents included Facility Management Plan (FPM) that describes the history of a project, feasibility study conducted, socio-economic characteristics at the implementation of the project, accomplishments, rules and regulations to be followed and project goals and objectives. Using the feasibility study data the researcher analysed the prospects and future sustainability of the project.

4.7.4 Levels of Data Measurements and Unit of Analysis

The process of data or variable measurements starts at an early stage of research tools preparation. The questionnaire was prepared in such a way that it could not hamper the variable measurements. The levels of measurements of variables were categorized

as the following: nominal level, ordinal level of measurements, or Likert's scale, interval level and the ratio scale of measurement. Table 4.4 illustrates the levels of measurements as used in this study.

Table 4.4: Levels of measurements and types of variables

Level of measurements	Types of variables
Nominal level	Gender, religion, marital status
Ordinal or Likert's scale	All questions with order of importance, for example (strongly agree to strongly disagree)
Interval level	Numerical scales in which intervals have the same interpretation throughout
Ratio scale	Numerical scale in which zero has a critical meaning in measurements
Continuous data	Income, age, water utilization, size of the family and level of education (formal), distance and time
Categorical data	Employment, occupation and sources of income

Source: Researcher's construct, 2014.

The collection of both qualitative and quantitative data led the researcher to employ multiple analyses techniques and approaches relevant for both types of data. The analysis of qualitative data was based on the thematic categorization of the transcribed interviews through coding. The researcher reduced some data through grouping and merging of codes to create categories, families and themes (Friese, 2014). All these processes were done by the help of ATLAS. ti computer programme. Throughout the process of data reduction, the researcher established the relationships between different themes and factors according to the research questions, theoretical and conceptual framework. Quantitative data were analysed with the help of SPSS and Stata computer programme. Based on background data of the households' survey, the first task of data analysis was to compare the socio-economic profile of respondents to the profile of the communities surveyed. In this way, we can identify the degree to which the survey can be said to represent the broader community.

Participation is an individual decision, option and choice. However, when discussing local community participation in water management, it is considered at community level. To justify this, the data was not only collected at household, but also at community and institutional level. Therefore the unit of analysis is based at community and institutional level. However, the field study was conducted in three different communities but the analysis was done by combining all the three communities because they are all using one source and water system. Furthermore, all the three communities are located in the same district and location, so they share many characteristics. The probability that some of the variables would vary greatly among the communities is quite small or almost negligible.

4.7.5 Research Analytical Tools

Following the specific research objectives and specific questions, theoretical and conceptual frameworks are presented in the preceding chapters. The researcher examines empirical data on independent and dependent variables to test whether they are positively or negatively associated or correlated and the level of significance among the variables. Furthermore descriptive analysis and tables were applied for quantitative data, while thematic analytical tool was applied for qualitative information.

The study has three objectives. For objective one, which seeks to examine local meanings of 'participation' under different socio-cultural perspectives and stakeholders views of the concept of 'participation' in relation to peri-urban community-based water management, factor analysis-Structural Equation Model (SEM) was used. Eight (8) variables were developed and considered as the determinants factors that influenced peri-urban community in understanding a local

meaning of 'participation'. These determinants were local beliefs, level of education, political party affiliation, social and economic status, social networks, trust and availability of other NGOs and were regarded as independent variables. Apart from SEM, thematic analysis was also used for qualitative information. The results for SEM diagnostics confirmed that the model was fit for analysis, The Varimax with Kaiser Normalization (KMO= 0. 714, Bartlett's Test of Sphericity (chi-sq= 67.173, sig = 0.000). Furthermore, the Goodness Fit Index (GFI) was (0.91-094), Comparative Fit Index (CFI) = (0.91-0.94) and Cronbach's Alpha was (0.89-0.93) for all factors tested.

The Logit regression model and descriptive is used to analyse the objective two. The objective is to determine the scope of community participation in community-managed water facility, its sustainability and drive for communities' participation. The objective aims to measure the association and levels of significant factors that influence household participation in local community development projects. Fourteen (14) variables were developed for it. These variables included age, gender, level of education and religion, years settled, indigenous status, household size, income, local beliefs, social status and social networks, trust, demand for services and political party affiliation. Based on objectives set, the variables accomplished the objective two more successfully as the model fit was fulfilled. However, it does not mean that being 'model fit' is the good model than others. To accomplish objective three, only thematic and descriptive analyses were applied. Objective three aimed at examining the role of water institutions in the sustainability of community-managed water facility. The researcher addressed issues of validity and reliability for both my data and my interpretations (Miles & Huberman, 1994; Patton, 2002). To ensure the transcription and interpretations were accurate, the researcher used member checking by discussing the observations and inferences with informants, confirming the

transcribed audio, clarifying the interpretations and honing the comprehension (LeCompte & Schensul, 1999).

4.8 Limitations of the Research

In this study, the researcher encountered some limitations from the use of multiple methods of data collection, selection of community to be studied and the definition of the word "peri-urban". This research was conducted in the three communities of Ga-East Municipality; therefore the findings could not be broadly generalized to the whole region. It should also be noted that due to the different population size, socio-economic profile, availability and alternative of water resource use, technology of the system and other factors, the management of community water systems cannot be the same in different communities. However, the researcher tried to employ multiple methods to be able to view reality in multiple perspectives (Flyvbjerg, 2006).

4.8.1 Limitations of the Questionnaire and Ethical Consideration

The use of a structured questionnaire removed researchers' bias and standardized the information collected from projects sampled. The limitations of the technique were that:

1. The developed indicators are approximations, rather than observable, cardinal data.
2. It is difficult to weigh open-ended questions and responses with continuous variables.
3. Local participation and Sustainability indexes are developed from multiple variables, thus aggregation of variables to form a single index does not allow

separation of each variable's contribution towards participation and sustainability.

There are no clear cut boundaries and margins between local community participation and sustainability indicators, sometimes, one variable can affect another. In the literature, several variables are used interchangeably by different authors as indicators of sustainability or community participation and management. For example while cost recovery and water service delivery satisfaction are used as indicators of sustainability by Narayan (1995), it is used as an indicator of community participation by McCommon, Warner & Yohalem, (1990).

To enhance the consent of all stakeholders who took part as respondents in this study, the researcher had an introduction letter from the university informing them about the purpose of the study. Before the interview date, the researcher made prior appointments for in-depth interviews and the administered questionnaire survey. In addition, before the commencement of the actual interview and administered questionnaires, the researcher always made the respective respondents know that their participation in the interview was voluntary and all the information gathered from him/her would be used for research purposes only. The researcher also made the respondents aware that he would not disclose their identities without their permission if it were to be used in the writing of the findings. Furthermore, the respondents were requested to fill the informed consent form. The informed consent form is included in Appendix 2.

4.9 Profile of the Greater Accra Region and Ga East Municipal Assembly

According to the National Population Housing Census NPHC (2010), Greater Accra Region is the second populated region with a population of 4,010,054 (16.3%) after

Ashanti region, with a population of 4,780,280, representing 19.4 percent of the country's total population (GSS 2012). Although (GAR) is less populated than Ashanti region, it has more ethnic groups and is heterogeneous, with a rapid urbanization of about 90.5% and 9.5% of urban and rural respectively. In addition, GAR has the highest population growth rate of 3.1% while the national average growth is 2.8%.

Currently, the population density of Ghana is 103 per km² compared to 79 persons per km² in 2000. The population density of Greater Accra Region has increased from 441 km² in 1984 to 1,236 km² in 2010. It is the most densely populated and the smallest region in Ghana; it has about 3,245 km² of land. The increase in population density implies more pressure on the existing social amenities, water system infrastructure and other resources in the country. The Ga East Municipal Assembly is located at the northern part of GAR. It is one of the ten (10) districts in the GAR and covers a Land Area of 166 km². The capital of the Municipal Assembly is Abokobi. It is located approximately 29 kilometres from the country's capital city Accra. The Assembly is surrounded by the Ga West Municipal Assembly (GWMA) on the west, on the east by the Adenta Municipal Assembly (AdMA), the south by Accra Metropolitan Assembly (AMA) and the north by the Akwapim South District Assembly.

4.10 Demographic Background and Socio-Economic Characteristics

The 2010 National Population and Housing Census put the Ga East Municipal Assembly's population at 259,668 with an intercensal growth rate of about 6.5%. The growth of the population is mainly due to the influence of migration inflows. The structure of the population has about 127, 258 or 49% males and 132, 410 or 51% females with an average household size of 3.8. There are about 66,286 households in

the municipality of Abokobi, a well-known Presbyterian community as the Municipal capital. The population is concentrated mainly along the urban and peri-urban areas of the Municipality particularly along the border with AMA to the south. These include Madina, Dome, Taifa and Haatso.

4.10.1 Water and Sanitation and Municipal Economy

Potable water supply in the peri-urban areas of the municipality has been a major challenge to the Assembly, especially when the Assembly has no direct control over urban water supply. Areas like Madina, Dome, Taifa, Agbogba, Adenta West and Ashongman Musuko have limited or no access to pipe-borne water. Others depend on tanker services and a few hand dug wells. In general therefore, the price of water is fairly high in these urban communities. The situation is further worsened by the steadily increasing population through the influx of skilled and unskilled labour from the rural and urban areas. In the rural areas and small towns however, the Municipal Assembly is responsible for water supply. The Assembly is currently managing three small towns' piped schemes through WSMT. These are Abokobi-Oyarifa-Teiman scheme, Kweiman-Danfa scheme and Pantang Area Pipe scheme. The three schemes cover twenty-three communities.

The Ga-East Municipal Assembly is dominated by private investment, public sector and joint venture-ship. There are four main economic activities in the District which are commerce, agriculture, service and industry. In the agricultural sector, farming is the major economic activity for about 55% of the economically active population. About 60% of the rural population depends on crop production and livestock production as their main source of livelihood with about 95% of them being small

holders. However, there is an indication that farming activities are declining as the district becomes more urbanized.

4.10.2 AOT Community Water Project and Operations of WSMT-WATSAN management

The AOT water supply system was constructed by the Government of Ghana with support from the Danish Government and the beneficiary communities. Danish International Development Agency (DANIDA) provided (90%), Ga East Municipal Assembly (5%) and the Abokobi allied communities (5%). The AOT scheme is shared system with other communities (Oyarifa and Teiman). The scheme started operation in February 2004. Currently, the scheme has 616 numbers of private household subscribers and 20 public stand pipe. Box 4.1 illustrates the details of the AOT system management and governance, while Table 4.5 illustrates technical water project system.

Box 4.1: Characteristics of AOT community water system

1.	CWSA-facilitated water system
2.	DANIDA-funded intervention
3.	1 mechanized borehole with a yield of about 50m^3/hr as source
4.	One number, grounded-level tank of capacity 150m^3
5.	Shared water supply facility serving three communities
6.	Direct Management Model of system by WSMT through System Manager
7.	Operation and Management staff made up of System Manager, Accounts Officers, 4 Operators, 2 Plumbers and 21 water vendors
8.	Standpipe revenue handed over to WATSAN Treasurer
9.	Limited authority given to System Manager
10.	Hygiene promotion undertaken by WATSAN Committees

Table 4.5: AOT system information

Source of water		**One (1)Borehole**
Reservoir		150cubic/33,333.33 gallons
Power supply		National Electricity Grid
Total network		33.5 km transmission & Distribution
Distribution		Stand pipe and private household connections
Public stand pipe	Abokobi	8
	Oyarifa	4
	Teiman	8
Private household connection	Abokobi	115
	Oyarifa	270
	Teiman	231
Min pipe size		25mm
Max Pipe size		150
Estimated population of the project area		8,000
Tariff per 18-litre bucket (stand pipe)		0.05 persewas
Tariff per cubic metres for subscribers		GH¢ 2.75
Vendors sales account per cubic metre		GHc 2.50
Current population served		Approximately 6800

Source: Facility Management Plan (2004)

The Water and Sanitation Management Teams of AOT consist of twelve (12) members; three of the members are secretaries from the three communities, namely Abokobi, Teiman and Oyarifa. The project has employed vendors for the sale of water at stand pipe points and six (6) caretakers or technical operators; two (2) are stationed at the head works and the four (4) at the office. Vendors pay water sales to WATSAN treasures based on meter readings, and then, the treasurer pays the money into the WSMT's accounts every three days. The treasurer submits the pay-in-slip to the office for receipt. WATSAN receives 25% commission from the WSMT and pays 20% of it to the vendors. The caretakers are responsible for monitoring of pipelines and meters, carry out all maintenance work in the system with the exception of the submersible pump and control panels.

The AOT community water project in its daily activities is managed by the system manager on behalf of WSMT. The system manager works close with WATSANs

technical operators and vendors; of the twenty one (21) commissioned vendors, 90% are female. WSMT paid quarterly allowance which is termed as an incentive as no salary is paid to them. WSMT meets quarterly and discuss emerging issues that occurred within the entire period. Municipal Assembly/DWST is always invited to attend quarterly meeting.

The AOT WSMT management model is WATSAN based. This is because the AOT WSMT comprises of representatives from the three different WATSAN Committees of communities which benefit from the system. It was argued that the Model would be appropriate for the management of the water system because: it is pro-poor, management is resident in the community, it will ensure a sense of ownership, socially acceptable tariffs be approved by District Assembly. It will create job opportunities for community members, and payment of community-employed staff contributes to re-investment of capital in the community. It will also be cost effective (cost of operating, managing and maintaining the facility), and that the management will be a responsibility of the community and District Assembly. The model recognizes the activities under the direct control of the WSMT. The WSMT is not only taking decisions and making certain proposals to the DA for approval but also mandated to: contract maintenance service personnel to undertake major maintenance works and propose annual budgets to DA for approval. Furthermore, the WSMT has to undertake water quality tests, directly employ, supervise, monitor, pay and fire its staff, approve and undertake private connections and perform other administrative roles as described in the CWSA guideline. Box 4.2 illustrates the features of AOT community-based management model.

Box 4.2: Features of AOT Community-Based Management Model

a)	WATSAN Committees of 5 members formed from each community
b)	At least 2 female being members of WATSAN committees from each community
c)	13-member WSMT is made up of representatives of each WATSAN Committee and other stakeholders (e.g. District engineer, Community Development Officer, Environmental and Sanitation Officer)
d)	At least 40% of WSMT members should be represented by women
e)	System Manager (SM) appointed by WSMT to act on its behalf. SM is given some limited power to manage the facility
f)	Water vendor hands up daily revenues to WATSAN treasurer
g)	Each WATSAN Committee operates an account where they keep revenue from standpipes and forward on monthly basis to the WSMT
h)	WSMT operates 2 bank accounts, thus, Operation Account and Maintenance Account
i)	Signatories are WSMT Chairperson, Secretary and Treasurer
j)	The District Assembly through MWST provides supervision and monitoring
k)	Operational staff are responsible to the System Manager (SM) but paid by WSMT-they include 1. Accounts Officer 2. Pump attendants 3. 2 plumbers 4. Vendors 5. Security personnel

4.11 Conclusion

The chapter has discussed how data and information were generated and analysed to correspond with the objectives of the study. The data were gathered through qualitative and quantitative approaches. A thread that runs through the data generated is the local participation and the role of water institutions in sustainable management of water facilities. It may be argued that, statistically, this research employs sufficient samples for the purpose of research. Moreover, this study assumes that individual respondent's preference on choice of participation on water issues might be seen as household decisions since once he or she decided to join or not to join community-based water supply system, it becomes the choice of each representative household. Although all of the households and stakeholders covered in the study may not have had enough experience regarding participation and sustainability of community-based

water management, the researcher believe that they would have the experience of working closely together with other local communities and institutions.

The provision of water and sanitation services is a critical challenge of the study area as the rapid population growth outweighs the capacity of the government to meet the demands of population. The CWCL has not been able meet the demands. However, CWSA facilitated water project is the main source of water though its capacity also is unable to supply to all dwellers.

CHAPTER FIVE: LOCAL MEANINGS OF 'PARTICIPATION'

5.1 Introduction

This chapter presents demographic characteristics of respondents, results and discussions of the first objective aimed at examining local meanings of participation under different socio-cultural perspectives and stakeholders views of the concept of 'participation' in relation to peri-urban community-based water management. The data being analysed and discussed in this chapter are based on questionnaire survey of at households, in-depth interviews of three (3) members of the WATSANs, six (6) members of WSMT of the three communities. Furthermore, information was collected from four (4) members of government agencies (CWSA and District Assembly) at regional and district levels. Six (6) members from research institutions, NGOs and one (1) member from private sector were interviewed. It also covers the overview of the AOT community supply water system.

5.1.1 Demographic Characteristics of Respondents

The ages of the household respondents in the sample varied from 21-30 age range to 51 and above. The largest number, 28.5% were in the 41-50 age range. The minimum and maximum age was between 21 and 81 respectively, with the average age of 41. In terms of gender, 56% were female and 44% were male, (see Table 5.1). This indicates that the study area is dominated by an active and energetic age group. The gender difference corresponds with Ga-East population census 2010 whereby the district comprised about 51% and 49% of female and male respectively (GoG, 2010). The difference in this can probably be explained by the traditional and stereotype gender roles in household water care that women are highly responsible for fetching and

taking care of water issues at household level. However, age and gender have positive correlation but have insignificant effect for participation in community water management.

Table 5.1: Demographic characteristics, age and gender

Age		
Category	**Frequencies**	**Percentage**
21-30	66	27
31-40	59	24
41-50	71	29
51 above	49	20
Total	246	100
Gender		
Female	138	56
Male	108	44
Total	246	100

Source: Author's field survey, 2014

According to the survey, the distribution of marital status was as follows: the largest proportion, 63%, was married, followed by single or unmarried who constituted 19%. The lowest recorded status, 8% represented those who had separated, 6% represented divorced and the lowest was widowed 4%. Also, there is a slight difference between separated and divorced with a small percentage of widowed. Table 5.2 indicates the summary of results.

Table 5.2: Marital status of respondents

Marital	**Frequencies**	**Percentage**
Married	155	63
Single	47	19
Separated	20	8
Divorced	15	6
Widowed	10	4
Total	246	100

Source: Author's field survey , 2014.

5.1.2 Household Water Sources and Years of Settlement

The results show that among the respondents, 87% rely on non-household subscribed to piped system, i.e. they fetch water at public water points, while11% are household piped subscribers, and 2% said they were depending on private household pumps. The respondents had a variety of the amount of years settled at AOT areas ranging from 1 year to 30 years and above. The results indicate that 52% had lived between 1-10 years in the study area, representing the largest distribution, while 6.5% had lived in the study area between (21-30) years, (see Table 5.3).

Table 5.3: Household water sources and number of years settled

Type of sources	**Frequencies**	**Percentage**
Non-household subscribers	214	87
Private household subscribers	27	11
Public hand pump	50	2
Total	246	100
Number of years settled		
1-10	128	52.0
11-20	42	17.1
21-30	16	6.5
30+	60	24.4
Total	246	100

Source: Author's field survey, 2014.

5.1.3 Education Level, Ethnicity and Religious Groups

The respondents had different levels of education ranging from formal to non- formal education and from primary to university level of education. The majority's highest level of education was secondary. The results also indicate that majority of the respondents attained basic primary education. The study area was predominately dominated by Ga-Dangme (37%) and the least one was Guan and Gurma with 1% each. Furthermore, the results indicated that the majority of the respondents were

Christians 81%, followed by Muslim 8%, believers in the African Traditional Religion 5% and those who did not belong to any of the groups were categorized as none, 6%. The statistics are presented in Table 5:4.

Table 5.4: Education level, ethnicity and religious groups

Level of education	Frequencies	Percentage
Primary	44	18
Secondary	108	44
Vocational education	54	22
University	22	9
Non formal	17	7
Total	246	100
Ethnicity		
Ga-Dangme	91	37
Ewe	69	28
Akan	54	22
Grusi	10	4
Mole-Dagbon	10	4
Mande-Busaga	5	2
Guan and Gurma	2	1
Others	5	2
Total	246	100
Religious groups		
Christians	199	81
Muslim	20	8
Traditional	12	5
Other	15	6
Total	246	100

Source: Author's field survey, 2014.

5.1.4 Dwelling Unit Ownership, Occupation and Household Income

In terms of residence status, the majority of respondents indicated that they were living in their own house 59% than 41% renting. Statistically, Greater Accra Region had about 32.4% of dwellings units owned by occupiers and renting about 47% (GSS, 2010). There is a substantial variation between the Greater Accra Region and at the

AOT areas in terms of ownership. Explanation for this lies in the fact that the average annual household income (GH¢6600.00) was almost more than four times that of the national average annual household income (GH¢1,217.00) (GSS, 2010), but also because the study area was a peri-urban area, so, there were more opportunities to occupy land and plots for house construction than in the inner city of Accra.

The sampled respondents showed that about 34% engaged in trade as their main occupation, 26% were professionals or rendered some professional service, artisans were about 25%, 9% had agriculture-related jobs and the unemployed were about 6%. In many circumstances, the income status of any community is always associated with economic activities in that particular community. The study area indicated that the average household minimum income was GH¢70.00 and average maximum income of GH¢ 1500.00 with an average income of GH¢555.00. This income is substantially higher than the national average household of GH¢ 1,217.00. The average household family size was 4 people, with an average of 1 and 13 as the minimum and maximum of household family size respectively.

Measuring monthly household income is not an easy task. However in many studies like Low, (2005); Morris *et al.*, (2000) household income is measured by either household wealth index or expenditure index. The major challenge is that, traders or self-employed people usually have difficulties in differentiating between incomes and capital (Tipple *et al.*, 1997). In addition, people in formal employment are willing to provide information on their basic incomes excluding any allowances, benefits and or bribes. This study used monthly household income direct approach to solicit household monthly income information (Spencer, 2007). The researcher accepts the argument of (Tipple *et al.*, 1997; Morris *et al.*, 2000), that such reported household incomes are most likely to be unrealistic. However, in the study area there were some

evidences as many respondents engaged in trade and professional work which have high returns. To capture more realistic information about the household income the researcher probed household's wealth.

The research was intended to understand the local meanings[14] of the concept of participation and how it is understood by water stakeholders. The results and discussion of this objective are divided into two sub-sections: these are quantitative and qualitative results and discussions respectively.

5.2 Results and Discussions

In realising and fulfilling the first objective of this study which is aimed at examining local meanings of participation under different socio-cultural perspectives and stakeholders' views of the concept of 'participation' in relation to peri-urban community-based water management, factor analysis was used to examine the major properties of the major constructs for the study. The factor loadings structure was employed to determine the factor scores of the local meanings of participation. Three constructs were used to determine the scale of loadings (strength and weakness) for each item, those are Local Meanings of Participation (LOCMEANINGSPAT), Perception Concept of Participation (PERCONPAT), and Factors which Influence such Perception (FACIPER). All the scale items loaded highly on the factors they represented. Furthermore, Structural Equation Model was used to determine the coefficient/correlation, standard errors and significant level for each construct/ variable.

[14] "Sustainable development solutions must be home-grown to be successful." (Makhtar Diop, World Bank)

Table 5.5: Community conceptualization of 'participation': constructs of factors loadings

Local meanings of participation (LOCMEANINGSPAT)	Factor Loadings
Community involvement in decision-making	0.585
Community representative	0.876
Attendance in public meetings	0.880
Participation in community water activities	0.692
Contributing money	0.773
Contributing man power (non-monetary)	0.963
Women participation	0.759
Perception Concept of participation (PERCONPAT)	
Water is a Public amenity	0.996
Governance should finance all costs	0.998
Donors and NGOs should finance all costs	0.998
Women should participate more than men	0.994
Factors influence perception (FACIPER)	
Local beliefs	0.803
Level of education	0.865
Party affiliation	0.914
Social status	0.830
Economic status	0.913
Social networks	0.790
Trust	0.923
Availability of Projects funded by NGOs	0.710

Source: Author's computation, 2014.

The results of the factor loadings (see Table 5.5) indicate that all the variables had factor loadings scale above 0.5, indicating internal consistency as a result; all 19 items were retained for the confirmatory phase.

Since the data for the study were generated using Likert's scaled responses, it was deemed necessary to perform a reliability and validity test (see Table 5.6). The internal consistency of each factor was tested using Cronbach's Alpha. The reliability analysis was conducted by calculating the Cronbach's Alpha for the main three constructs in the study. The results showed that the alpha coefficients for the three constructs were highly significant after the alpha optimization process was carried out, indicating internal consistency, reliability and validity of the factor loadings under the three major constructs (Table 5.6).

Table 5.6: Statistical test of reliability and data validity

Construct	**Exploratory Analysis**		**Confirmatory Factor Analysis (CFA)**			**Reliability**
	Eigen value	% of Variance Explained	Cumulative Variance Explained	GFI	CFI	Cronbach's Alpha
Local Meanings of Participation (LOCMEANINGPAT)	4.4638	71.60	71.60	0.94	0.94	0.89
Perception Concept (PERCONPAT)	3.9732	21.60	93.20	0.91	0.91	0.99
Factors for Perception (FACIPER)	5.7285	6.80	100.00	0.94	0.94	0.93

Source: Author's computation, 2014. (Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization (KMO= 0. 714, Bartlett's Test of Sphericity (chi-sq= 67.173, sig = 0.000).

The result indicated that the Cronbach's Alpha which measures the internal consistency of the data for the three main constructs fell within the threshold point. Alpha coefficients for Perception Concept of Participation (PERCONPAT), Factors that Influence Perception (FACIPER) and Local Meanings of Participation (LOCMEANINGPAT) range between 0.89 and 0.99 after Alpha computation process were carried out, indicating internal consistency and a significant level of data accuracy (Table 5.6). As a result, 19 items were retained for the confirmatory phase.

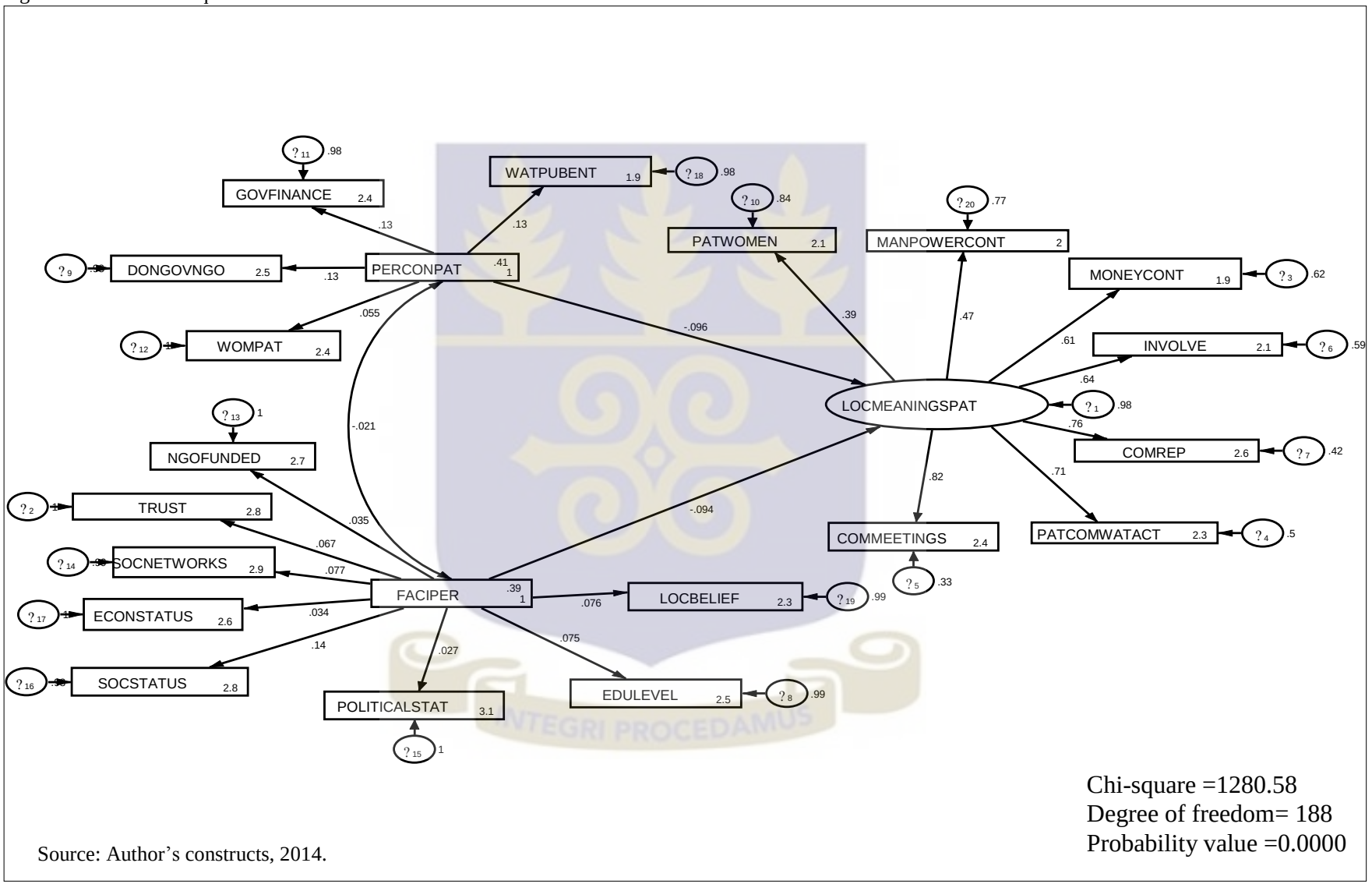
The CFA or a measurement model using STATA 13.1 was employed to examine construct validity of each scale by assessing how well the individual items measured the scale. Specifically, the CFA was used to detect the directional and factor redundancy (weakness) of each construct. The GFI (0.91-0.94) and CFI (0.91-0.94) of the three constructs computed from the CFA exceeded the 0.90 criterion hence establishing the construct validity. The outcome of these tests on both the dependent and independent variables showed that most of the items were loaded highly on their corresponding constructs, and this confirms the fulfilment of the independent axiom of the factors under each construct.

5.3 Structural Equation Model

A SEM was employed to test the directional linkages to determine the relative strength of relationships between the variables. The relationship among Perception Concept of Participation (PERCONPAT), Factors that Influence Perception (FACIPER) and Local Meanings of Participation (LOCMEANINGPAT) were depicted in the model (see Figure 5.1). To support the assumption regarding the fitness or robustness of strength of the SEM model with the empirical data, the acceptance of the null hypothesis of the overall model should be applied. Hence, in this test of goodness of fit for the structural equation model, the resulting value should be higher than 0.01 to support the overall null hypothesis of the SEM Model.

Findings of the SEM indicated that the resulting Chi-square value was 1280.58 with 188 degrees of freedom and probability value of 0.0000 (Figure 5.1). The result supported the null hypothesis that the SEM model had a good fit (H0). The probability value was considerably substantial (p-value < 0.01), in supporting the proposition that the overall model fitted the data. Furthermore, other statistical structural indices such as GFI = 0.94), Bentler Comparative fit index (CFI = 0.94), Bollen Incremental Fit Index (IFI = 0.94) further suggested that the model had a satisfactory fit. Since the probability value and structural modelling indices were way above the recommended level, the model was considered to be a reasonable representation of the data (Hair *et al.*, 1998; Agus, 2001).

Figure 5.1: Structural Equation Model



Source: Author's constructs, 2014.

The direct structural effect of PERCONPAT on the local meanings of participation was low with the structural effect value of -0.096. The standardized structural coefficient of PERCONPAT on local meanings of participation was associated with low standard error (0.048) and non-zero critical ratio (-1.99), which indicated that the structural effect between these two constructs was negatively associated, and the relationship was highly significant at (0.05). The local community felt that donors and NGOs should support peri-urban water supply and make the water supply free. They also expressed the desire that government should take up the responsibility of financing all related costs. The findings indicate that communities were against the hypothesis that women should participate more in water issues than men.

The direct structural effect of FACIPER on local meanings of participation was also low and had a negative structural effect of (-0.94) given complex linkages and significant at 0.10 with low standard error (0.048) and non-zero critical ratio (-1.95). The results indicate that communities' perception about participation is highly influenced by local belief, levels of schooling, social status and social networks, while political party affiliation, economic status and trust had no influence on local meanings of participation.

Furthermore, bidirectional relationship between PERCONPAT and FACIPER is not associated and is not significant at all. (Structural direct effect = -0.21), with low standard error (0.045) and highly insignificant, meaning that communities' perception on participation has no relationship with factors that influence their perception on participation and vice-versa. Therefore, there was enough evidence to accept the two hypotheses (H1 and H2) and were supported except hypothesis three (H3) which was not supported.

Hypothesis One (H1):

It was hypothesized that Perception Concept of Participation (PERCONPAT) has no significant effect on local meanings of participation. This according to the findings is rejected in favour of the alternative that there is a negative effect on understanding the local meanings of participation.

Hypothesis Two (H2)

Secondly, it was also hypothesized in the study that Factors Influence Perception (FACIPER) has no significant effect on local meanings of participation. Again, this was also rejected in favour of a negative structural effect on local meanings of participation (H2).

Hypothesis Three (H3):

Finally, the researcher accepts the null hypothesis that Perception Concept of Participation (PERCONPAT) and/or Factors Influence Perception (FACIPER) has no significant mediating effect with local meanings of participation and concludes that indeed, FACIPER and/or PERCONPAT had no significant mediating effect with local meanings of participation (Baron & Kenny, 1986).

Overall, it is essential to reaffirm that FACIPER and PERCONPAT can ultimately affect local meanings of participation in community water management. The Structural and Measurement Results of the Structural Equation Model are presented in Table 5.7.

Table 5.7: Structural and Measurement Results of the SEM

Perception Concept of Participation (PERCONPAT)	**Coef.**	**Std. Err.**	**Z. value**	**P. value**
Water is a Public good should be free (WATPUBENT)	0.1342***	0.0443	3.03	0.002
Governance should finance all cost (GOVFINANCE)	0.1317***	0.0443	2.97	0.003
Donors and NGOs should finance all cost (DONGOVNGO)	0.1294***	0.0443	2.92	0.004
Women Should participate more than men (WOMPAT)	0.0551	0.0449	1.23	0.220
Factors influence such perception (FACIPER)				
Local beliefs (LOCBELIEF)	0.0764*	0.0448	1.70	0.088
Level of education (EDULEVEL)	0.0747*	0.0448	1.67	0.096
Political party affiliation (POLITICAL STAT)	0.0269	0.0451	0.60	0.550
Social status (SOCSTATUS)	0.1376***	0.0442	3.11	0.002
Economic status (ECONSTATUS)	0.0336	0.0450	0.75	0.456
Social networks (SOCNETWORKS)	0.0767*	0.0448	1.71	0.087
Trust	0.0668	0.0449	1.49	0.137
Availability of Projects funded by NGOs (NGOFUNDED)	0.0346	0.0450	0.77	0.443
Local meanings of participation (LOCMEANINGSPAT)				
Community involvement in decision-making (INVOLVE)	0.6434***	0.0308	20.91	0.000
Community representative (COMREP)	0.7626***	0.0243	31.40	0.000
Attendance in community public meetings (COMMEETINGS)	0.8165***	0.0212	38.51	0.000
Participation in community water activities (PATCOMWATACT)	0.7085***	0.0272	26.03	0.000
Contributing money (MONEYCONT)	0.6145***	0.0331	18.57	0.000
Contributing man power (none monetary) {MANPOWECONT}	0.4748***	0.0400	11.86	0.000
Women participation (PATWOMEN)	0.3940***	0.0425	9.27	0.000
FACIPER ------->LOCMEANINGSPAT	-0.0939*	0.0482	-1.95	0.051
PERCONPAT-------->LOCMEANINGSPAT	-0.0957**	0.0480	-1.99	0.046
FACIPER <-------> PERCONPAT	-0.0214	0.0451	-0.48	0.634

Source: Author computations from Survey Data, 2014. Note that: *** denotes P<0.01= 1%, ** =p<0.05=5% and * =p<0.0.1=10% levels of significance

The findings showed that the following perceptions have positive correlation and are significant at (0.05) with understanding the concept of participation. Those perceptions were: water is a public service and should be freely provided, government should finance all cost and or donor or NGOs should finance all cost. However, the perception that women should participate more than men had negative association and is not significant. Arapto and Adisenu[15] (2006), argue that community's perception about participation in community-managed water facility is as a result of the people's opinions about the responsibility of government to provide water for them and the reading of politics into development projects. The researcher further concluded that people think that the services the NGO's offering are being offered by the government and under no circumstances should they offer free services to the government, (*ibid*).

Furthermore, this study was interested in understanding the factors which influence such perception. The results indicated that all factors used to determine the influences of perception were positively associated but not all were significant. The following are factors which were significant: local beliefs at (0.10), level of education at (0.10), social status at (0.05) and social networks at (0.10). While factors which were not significant are: political and party affiliation, economic status, trust and availability of projects funded by NGOs. However, Political party affiliation (POLITICAL STAT) was not significant in the study but literature and the in-depth interview conducted revealed that it has an impact. For instance Arapto and Adisenu[16] (2006) noted that when somebody is affiliated to an opposing political party and the rival party is leading a project, others on

[15] http://www.ghanaweb.com/GhanaHomePage/NewsArchive/artikel.php?ID=125917. Accessed on 06/06/2014

[16] ibid

the other side of the affiliated political party fail to participate for fear that their opponent might score cheap political points.

The study also focused on finding out the local meanings of people's participation in water services. The findings from qualitative data showed that all local conceptualizations of 'participation' had positive correlation and were all significant to the local meanings of participation at (0.00). Such local meanings conceptualizations of participation were:

- Participation is about local community involvement in decision-making.
- Participation is about community representation.
- Participation is about attending public community meetings.
- Participation is about participating in community water activities.
- Participation is about contributing manpower, in kind and women inclusive.

5.3.1 State and Stakeholders Understanding on Participation

As participation in peri-urban water supply system has no boundary in itself, a variety of different actors in participatory processes each might have different perceptions of what 'participation' means (Cornwall, 2008). Water actors' and stakeholders' perception may concede or differ with the local community's perception. The state and the stakeholders' views on understanding fall into four forms as described by White (1996) and Cornwall (2000). Those forms are nominal, instrumental, representative and transformative. Justification or legitimacy is another form played by the government. Table 5.8 illustrates the form of participation, what 'participation' means to the implementing agency, what

'participation' means for those on receiving end and what 'participation' is for? are the categories that the study uncovers.

Table 5.8: Meanings of participation, state and other stakeholders' views of 'participation'

Form	What 'participation' means to the implementing agency	What 'participation' is used for
Nominal	Legitimation – to show they are doing something	Display
Instrumental	Efficiency – to limit funders' input, draw on community contributions and make projects more cost-effective	As a means to achieving cost-effectiveness and local facilities
Representative	Sustainability – to avoid creating dependency	To give people a voice in determining their own development
Transformative	Empowerment – to enable people to make their own decisions, work out what to do and take action	Both as a means and an end, a continuing dynamic

Source: Adapted from White (1996) and Cornwal (2000).

The histories of local meanings and stakeholders in understanding the concept of participation whether by the state, development partner, individual, religious authority or NGOs – in different places is complex and diverse. In understanding these diverse calls for an approach to understand the historic nature of the entire society and who dominates the process of participation. The modern participation is an inherently political process rather than a technique. It is evident that local meanings, perceptions of participation and stakeholders' views are in themselves no panacea for full community participation.

The Qualitative analysis indicates the concept of participation as viewed by the government has taken on a deeper meaning especially in water management more than it used to be in traditional water management. This deeper meaning of participation has enhanced sustainability of many water systems. The government official stated that:

> *.I think, that concept of local participation in community management has really been the underpinnings of the sustainability of structures and in a way; it's become a key ingredient of the sector strategy and government's desire to extend it to more people*[17].

The findings show that communities are willing to participate more on valued resources in-kind and labor, as well as time and local knowledge. But when it comes to participation through valued resources in cash the majority of them perceive that it is the role of the government institutions. In the study, the government official said:

> *…everybody wants to be part but then when it gets to a point, they think that government has to help especially when it comes to money or cash and then also.., While the local level, they welcome it more at the mobilization stage, at the institutional level, you see that they should continue, they should see it as theirs and when something is going wrong, they should be concerned…*[18]

The government's perception about local participation in water management has changed its vision towards supporting the existing water supply systems; the priority is given to provision of new water systems. The provision of new water systems has marked up the increased coverage rate of water supply. It was suggested that coverage rate of water supply should simultaneously provide the same water service delivery between the old and the new water systems (GoG, 2007).

The government perceives the concept of participation as a means of empowering local community and creating self-reliance for their own development (Binns & Nel, 1999). The concept and notion of participation as it is viewed by the government that it is to bring people of different statuses together and

[17] DDO

[18] TREND

empowering the poor is confusing and contradicting itself. The commitment of the government towards serving the poor through participation is bias and unfair. One of the officials from NGOs said:

> *Those of us in the urban town who get water from Ghana water, we don't pay towards construction. We just pay for the service and even the charges, the amount we pay for a unit of water is lower than that the amount the community people pay for a unit of water and so if you say that you are calling the whole community participatory approach as a means to provide service to the poor, then the government is not there yet because they end up paying more for the service than we pay and then they are contributing to capital cost*[19].

The government was against the communities' perception on participation that water should be provided free by the government. Water is a basic necessity and the government should take a lead and manage the process of water supply. The government official stated that:

> *The truth is that water is free. It's available. It rains and you see water around but it is the cost of the treatment, the piping, the plumbing, it's the cost of making sure that the service is there 24 hours, 7 days a week*[20].

NGOs view the concept of participation as bringing development close to the community and increasing the elasticity of community ownership and to give people a voice in determining the continuity and sustainability of the development project.

The study found that there are factors that influenced communities in understanding meaning of local participation. Among others was the area of the origin of the person or

[19] TREND

[20] CWSA engineer

household. People from urban areas may have different perceptions with people from rural areas. It was reported that:

> *A person who comes from Accra, he/she doesn't see people in Accra holding voluntary meetings for water facilities, it is difficult for a person to understand 'what participation is?' but for those from rural they may have a different experience because they do so*[21]

The perception of the local meanings of participation is also determined by culture of locality (rural or urban). The practices and perception of participation change over time (Danielsen, *et al.,* 2009). Country policy strategy, priority and conditionalities from IFIs changed the communities' perception of the concept of participation (Goldsmith, 2001). For example, in Ghana it was revealed that in rural areas they still practice traditional participation. The government official was in the opinion that:

> *Participation is to have the spirit of helping each other. We are African, we know of African communities can be together to build a house for a chief, in fact even the way rural houses are built, there is a certain things common. Those days when wild animals attacked, people come together to do things, there is even the method of farming in Ghana, called NOBWA… people went to each other's farm to work, so this cooperative way of living was already there*[22].

Local meanings of participation is perceived as everybody's bringing his or her ideas, skills, non-cash resources and thoughts together for the betterment of their community. The contribution of cash resources is meant for emergencies and necessity of the service like water.

[21] Safe Water Official

[22] CWSA official

5.3.2 Conclusion

Interestingly, some indicators were found to have positive association and significant effects on understanding the local meanings of 'participation'. However, there were some variations between stakeholders' and local community views in conceptualizing and understanding the concept of participation. But the main factor for the variation was about 'cost', while people in the community think that they should contribute on non-monetary basis, the state agencies and stakeholders expect that the community should not only contribute non-monetarily but also monetarily for running the project. The researcher agrees that the adoption of local community participation is a lengthy process to improve the operation and maintenance and cost recovery as well as the sustainability of a water supply facility. The researcher suggests that extensive education is still needed to change people's perception that it is the governments' responsibility to provide them with drinkable water for free. Furthermore, community development projects should be strongly barred from politics.

CHAPTER SIX: COMMUNITY-MANAGED WATER SUSTAINABILITY AND DRIVERS OF COMMUNITIES' PARTICIPATION

6.1 Introduction

In this chapter the results and discussions are focused on determining the scope of peri-urban community participation in water management, drivers of participation and sustainability of the system. The discussions are based on research questions about what communities participate in, what factors drive their participation, who really participates, and as a corollary, at which stages and typologies of participation. Furthermore, the results and discussions on the associated, marginal effect and significant factors for community participation are presented and discussed. Furthermore, the results on the relationships between local community participation and sustainability of peri-urban community-managed water facility are also presented and discussed. Since the researcher used two methods for data collection (quantitative and qualitative), the results and discussions are also simultaneously presented and discussed. The presentation and discussions are as highlighted below.

- Community participation in planning process
- Participation in community public meetings
- Degree of local community involvement in decision-making
- Determinants for Local Community Participation
- Forms of local community participation
- Community water management
- Sustainability of Community-Managed Water Facility
- Factors for Sustainability

- Service-level delivery indicators and
- Customer Satisfaction

6.2 Results and Discussion on Participation in Planning Process

The respondents were asked of the ways in which local community members were involved or represented in the planning process. The results are presented in Table 6.1 as follows.

Table 6.1: Local participation in the planning process

Community Involvement/represented	Percentage			Total
	Agree	Neutral	Disagree	
Through public meeting	82.9	14.6	2.4	100.0
Through Faith Based	44.7	27.2	28.4	100.0
Through representative (s)	56.1	34.2	9.8	100.0
Through local community groups	64.2	30.5	5.2	100.0

Source: Author's field survey computation, 2013.

The field study as indicated in Table 6.1 shows that the vast majority of community members were much involved in the planning process through community public meetings, followed by participation through local community groups, then through representatives and the last method was through Faith-Based Organizations. The results indicate that the main method to involve communities in the planning process is through public meetings where every community member is free to express her/his views. The participation in the planning included selecting water committee members, determining operating hours for the point, establishing requirements for cash and/or labour contributions by households, and choosing tariff structure for their sustainability. The study conducted by Day (1997) found that local community involvement in project

identification/design and in implementation process was found to be an important influence behind the success.

It is important to note that, participation in planning does not exclude the use of technical advice and guidance provided that it is done in consultation with the people on a democratic basis. Such guidance is in fact necessary in ensuring sustainability as explored in this study. It is argued that illiterate and even elite people may lack analytical skills to articulate and explain their community needs but certainly they do not lack the general knowledge about themselves (Brokensha, Warren & Werner, 1980; Friis-Hansen, 1999). Again, Koocheki (2007; Stabinsky & Brush 1996) added a point that indigenous knowledge is an essential cultural and technological element of human societies. These arguments were also confirmed by a respondent:

> *Indigenous knowledge in feasibility study is very important. They make important contributions to the promotion of sustained community-based managed water supply system. For example they may tell you that this site has experience of ants so there is possibility of availability of ground water*[23].

However, some interviewees from NGOs had a different perception about the local community participation in the planning process. They argued that the local communities were not really involved. For example one NGO official said:

> *We don't involve them in planning, for instance, did they decide the size of the system that we want to put, they are not part of that decision-making, so our attempts to make communities to be fully involved specific to water facility is not effective*[24].

Local community involvement in the planning process in public community projects as emphasized by Paul (1987) is very crucial and is among the indicators for sustainability

[23] TREND official
[24] Ghana WASH official 1

of the implemented project. It encompasses gaining wide citizen support, incorporating local values, attitudes and symbols into implementation plans, gaining access to local leaders and resources, developing local skills and competencies for future community development/opportunities, negotiating conflicts between political factions and special interest groups and ensuring local ownership and long-term maintenance.

6.2.1 Results and Discussion on Participation in Community Public Meetings

Community participation in public meetings seems to be the only transparent approach to involve any household at the local level. Results on how much people in the study communities participate in public meetings are presented in Table 6.2.

Table 6.2: Local participation in public meetings

Participation in public meetings	percentage
Always participate/attend	68.0
Never participated	19.0
Do not know	13.0
Total	100.0

Source: Author's field survey computation, A2013.

Local community participation in public meetings is very important because it is the only way to include all people in decision-making and information dissemination (Sanoff, 2000). In the field study, findings on the extent of community's participation in public meetings varied between the survey and in-depth interviews and observations. The household survey data showed that there is high community participation in public meetings, which is 68% participated in public meetings, while the qualitative data indicated that local community participation was so low, about 40% of the community participate in public meetings. Furthermore, the attendance of women in public meetings

was higher more than men. The researcher also observed that the community participation was less than 40% of community beneficiaries. However, the District Development Officer (DDO) revealed that there was always high participation during the mobilization stage.

> *Initially when they did not have water, they were yearning to have water. So should we call for their participation in meetings, they were eager to come and support. Now that the water has come in, every four years we have to change the committee members, when we call for community meeting for them to come out so that we select good people to represent the board we don't see them as much as before*[25].

From the findings it was observed that attendance rate in public meetings started decreasing as the water started flowing. This can be argued in line with economic theory that the value of service or a product diminishes as its supply increases at a low price (Murdock & Schriner, 1979). Additionally, it was also revealed that community participation in public meetings varies according to the agenda to be discussed. One of the interviewees expressed that:

> *You know, people make a priority attending a public meeting, I have noticed that if water is not flowing for a while [sic].then you call for a public meeting they turn up, but if water is flowing they do not really turn up*[26].

From these findings it can be explained that the value of satisfaction of the water service delivered has a relationship with attendance in the public meetings. Once water is not flowing people would be interested to know why the water is not flowing and vice versa. One of the reasons resulting from low participation of local community in public meetings at the study area is said to be because of rural-urban continuum that as the areas

[25] District Development Official

[26] WATSAN Member

change from rural to urban interpersonal social cohesion between an individual and the community also diminishes (Harvey & Reed, 2004). The other reason for poor participation in local public meetings is the lack of convenient times for such meetings. This is because Muyale-Manenji (1998) has argued that the lifestyle in peri-urban areas forces communities to work around for their daily survival, hence, reduces their participation in public meetings.[27]

6.2.2 Results and Discussion on the Degree of Community Participation in Decision-Making

The study examined the degree of local community participation in peri-urban community-based water facility decision-making. The results are indicated in Table 6.3.

Table 6.3: Degree of community participation in decision-making

Factor	Percentage			
	High	Neutral	Low	Total
Identifying the need of the facility	83.8	16.3	0.0	100.0
Planning and decision-making	41.9	17.5	40.6	100.0
Implementation and monitoring	71.1	21.5	7.3	100.0
Operation & maintenance	66.7	28.1	5.1	100.0

Source: Author's field survey computation, 2013.

As argued by Irvin and Stansbury, (2004), user communities must be granted true decision-making authority. They should be given comprehensive information needed to make informed decisions, without being pressured to follow the preferences of the facilitator. However, in the study area, it was discovered that local community participation can be grouped into three stages/levels: level one is the

[27] http://www.oikoumene.org/en/resources/documents/wcc-programmes/public-witness-addressing-power-affirming-peace/poverty-wealth-and-ecology/neoliberal-paradigm/the-effects-of-globalization-on-culture-in-africa-in-the-eyes-of-an-african-woman. accessed in April, 08, 2014

mobilization/feasibility stage, the second stage is planning and implementation and, the last stage is the after inception of the facility. There was substantially high community participation in the first stage which included identifying the need of the facility at 84% (refer Table 6.3). It should be noted that, at this stage, communities were required to identify the need of the facility, attitudes and their capacities to run it. It did not involve any contributions than ideas and knowledge.

The second stage which is planning and implementation, we may argue that it was highly dominated by the facilitating agency CWSA, District Assembly (DA) and the contracted construction company. Community participation through decision-making during planning stage was low because it includes more technical issues and terms, however, communities were involved for social planning and other non-technical related issues. The government officials revealed that they were trying to involve the communities in every stage but the last decisions were made by the implementing agency. The statement was also supported by Ghana WASH staff who said:

> *Actually there is no participation, because the government goes to the community and tells them if you want this project you should do A, B, C.....E, if you do not do then the project will go to other community*[28].

Experience shows that the authorities may always agree that a community must participate in project decision-making but practical forms of community participation are not easy to devise and plan (Yap, 1990). There are no universally applicable guidelines for local community participation in project decision-making. Yap (1987) argues that the way a local community participates depends on its socio-cultural background; the political situation in the country, institutional approach and the design of the project.

[28] Ghana WASH Official

Nevertheless, the authorities may be willing to share decision-making powers with local community but this is usually not enough to achieve local community participation in decision-making because willingness does not mean readiness and capability. The local community and the authorities are often internally divided, with factions having different interests and degrees of power in decisions (Yap, 1989). The last stage which is operation and maintenance after the inception is 100% done by the community themselves. The study found that many of the decisions were made by WSMT and WATSANs and shared with the community. In average, most households had shared the decisions made.

6.3 Determinants of Local Community Participation in Water Management

As far as the decision to participate or not to participate is a matter of choice and is voluntary, the researcher sought to adopt the Logit Regression Model to identify the factors influencing the household's decision to participate in the community water management. The dependent variable for the logistic regression for household's participation in peri-urban community water management is measured as a dummy, 1 for household's participation (contesting, voting in election and other related activities) for WATSAN and WSMT and 0 for households not participated in any activity. Definition of the variables used in the model to determine local community participation and expected signs are presented in Table 6.4.

Table 6.4: Independent Variables in the Logistic Regression Model and Their Expected Signs

Variable	Measurements	Units	Signs
δ_0	Intercept		Coef/p.va
	Community Socio-economic and Institutional Factors		
Z_1	Age of household head	Years	+Ve/+Ve
Z_2	Gender (1 = Male and 0 = Female)	Dummy	+Ve/+Ve
Z_3	Highest level of Formal Education	Years	-Ve/+Ve
Z_4	Religion (1=Christian and 0=other)	Nominal	-Ve/+Ve
Z_5	Years settled at that particular community	Years	+Ve/Ve
Z_6	Indigenous (1=Ga Dangme and 0=others)	Dummy	+Ve/+Ve
Z_7	Household size	Number	+Ve/+Ve
Z_8	Income per household	GH₵	+Ve/Ve
Z_{10}	Social status (1=High and 0=Low)	Dummy	-Ve/+Ve
Z_{11}	Social networks (1=Yes and 0=No)	Dummy	+Ve/+Ve
Z_{12}	Trust (1=Yes and 0=No)	Dummy	+Ve/+Ve
Z_{13}	Demand for services (1=Yes and 0=No)	Dummy	+Ve/+Ve
Z_{14}	Political party affiliation (1= Ruling, 0 =otherwise	Dummy	+Ve/+Ve

Source: Author computations from Survey Data, 2014

The logistic regression model presented in Table 6.4 indicates how each variable was measured. Age of household head and highest level of formal education were measured through a progression number of years. Gender, ethnicity, local beliefs and social status, social networks, trust, demand for services and political party affiliation were treated as dummy variables. Religion was treated as a nominal variable, household size was treated as a continuous variable (number) while income per household was measured through Ghana Cedis (GH₵). Table 6.5 indicates the results of logistic regression model of coefficient, marginal effect, Z-value and P-value (significant level).

Table 6.5: Logit Regression Model for determinants of local community participation

Variable	Coefficient	Marginal Effect	Z-Value	P-Value
Constant	-1.222		-1.61	0.107
Age	0.009	0.001	1.13	0.259
Gender	0.131	0.008	0.68	0.496
Education	-0.314***	-0.020	-0.01	0.000
Religion	-0.053	-0.003	-0.45	0.652
Years Settled	0.574***	0.036	7.30	0.000
Indigenous	0.212***	0.013	3.58	0.000
Household Size	0.131***	0.008	2.81	0.005
Income	-0.000	-0.000	-0.39	0.695
Social Status	-0.538***	-0.034	-3.49	0.000
Social Networks	0.002	0.000	0.05	0.961
Trust	0.341***	0.021	2.67	0.007
Demand For Service	0.387***	0.024	3.57	0.000
Political Affiliation	0.343***	0.022	3.79	0.000
LR chi2 (14)=267.14				
Prob<chi2=0.0000				
Pseudo R^2=0.2565				
Number of observation =246				

Source: Computed from survey data, by author, 2014. Note: ***=1% and *=10%.

6.3.1 Education

The results show that level of education is a significant predictor of local community participation (β=-0.314) and significant at 1%. So these results entail that any additional years in schooling decreases the probability of the head of household's participation in community water management and development projects. The results do not support the work of Isham and Kohkonen (2002) who found that the average years of schooling had a positive association on household participation in community development projects. In peri-urban areas, dwellers are more educated than in rural areas. Therefore the probability for the head of the household in rural areas to participate in community-based water management is higher than in peri-urban areas (*ibid*). However, the water project is a

peculiar case because of its necessity and need. In the study area, the majority of them 53% attained secondary education level.

6.3.2 The length of Residence (Years Settled)

The length of residence that a person lived in a particular place is expected to have an impact on local community participation, meaning the more years one spend in the community, the higher the probability of participating in water management. Staying longer in the community increases the probability of participation by 0.036. Kasarda and Janowitz (1974) and Chavez (2005) also argue that the length of residence is the key exogenous factor that influences attitudes and behaviours toward the community engagement in social and community development activities. The temporal and residential mobility operates as a barrier to the development of extensive social and local ties, hence affect individuals' commitment to participation in peri-urban community management. Riger and Lavrakas (1981) found two dimensions of attachment that are communal in nature: a sense of *bondedness*, or feelings of being a part of one's community, and a sense of *rootedness* to the community. Manzo and Perkins (2006), argues that people with permanent residence are more emotional with local development projects that affect their lives than those with mobile residents. In addition, long-term community stability engenders the collective use of local facilities despite urbanization. Urbanization decreases the level of local participation when in-comers are from different communities with different cultures (Rene, 2005).

6.3.3 Indigenous Status

The study area is dominated **by** indigenous Ga-Dangme ethnic group, followed by Ewe and Akan and other six ethnic groups. However, in running the regression, indigenous [(Ga-Dangme) ethnic group was treated as =1, and 0= others]. Indigenous status has a positive coefficient and is significant for household's participation in peri-urban community-based water management at 1%. The condition or state of belonging to an indigenous group harmonizes the community members to be involved in voluntary associations and social groups. Involvement in these activities helps the community members to develop their own sense of community which is often mobilized around indigenous status pride. People who belong to the community abide by the rules of the community both because they internalize its ideology and because they face sanctions if they violate the rules (Manzuri & Rao, 2004). Therefore, being indigenous increases the probability to participate in peri-urban community-based water management by 0.036. It can be argued that the other ethnic groups migrated either from within or outside of Greater Accra Region as the findings indicate that 37% of dwellers of study area were Ga-Dangme and other eight ethnic groups comprise 63%.

6.3.4 Household Size

In this study, household size was also used to determine household participation in local community development projects. The results indicate that, it is highly significant at 5% level of significance and is positively associated. It can be interpreted that any additional member of household increases the probability of participation in peri-urban community-based water management by 0.008 (Table 6.5). Many big households prefer community

water source which is relatively cheaper than the water tankers, hence they tend to be more active in community water management with an image that community participation is being embedded with 'help one another' principles. The results also indicate that there is no correlation between household size and water utilization. Moreover, there was a correlation of water utilization between household and non-household subscribers. It is however, the bigger the household size, the more conscious on water utilization.

6.3.5 Social Status

Social status is a combination of many indicators, including: educational level, type and nature of occupation (profession or managerial position). However, sometimes household head and income is used as a substantial indicator for social status (Fischer, 1982). The results indicate that social status was negatively associated and significant at 1% significance level. This can be interpreted that the households with high status are less likely to participate in local activities. The probability of household with high social status participating in community-based water management decreases by 0.034. The results are in line Parsons with (1939) that a household status finds to fit into the society of the same status than being integrated of the whole entire community.

6.3.6 Trust

The results indicate that trust has a positive association and significant at 1%. The trust factor was also measured as a dummy variable, where by (1=Yes and 0=No). Trust is becoming a major issue in public resources management. Rahn and Rudolph (2002) revealed numerous community development project benefits associated with having high

levels of public trust, including the ability to gain compliance with local communities and encourage positive beliefs for beneficiaries. There is high incentive to cultivate household participation in community water management when there is a trust within and among the management team and community at large. Furthermore, trust has positive relationships with sustainable community water facilities as it encourages many stakeholders to support the facilities (Stein & Anderson, 2002; Cvetkovich & Winter, 2003). Trusted household heads are more likely to participate in local activities. Trust will likely increase the probability of participation in community water management by 0.021.

According to Barber (1983), trust is essential to every social relationship or social system and is integral to the exercise of power. It is fundamental to all stable social relationships and systems which in turn influence individual's decisions on participation. It reduces conflict and facilitates cordial cooperative behaviour. Public distrust, especially local community projects, can have severe negative implications for the effectiveness of local community participation (Buchecker et *al*., 2003). Distrust, also breeds scepticism, fear, and, in some cases, opposition that can result in a complete breakdown of the relationship, hence affect community participation (Barber, 1983).

6.3.7 Demand for Water Service

Water is a basic need for human survival; it is the second need after air. For this reason, there is no alternative to water. By using dummy measurement, (1=Yes and 0=No) the results show that demand for water services has a positive effect and is significant at 1%. This construes that as the demand for water services increases, the probability for household to participate in peri-urban community water management increases too. It

increases the probability of participation by 0.024. The theory of demand and supply stipulates that for necessity goods and services like water, when the supply is low demand prices increase. In peri-urban areas, the water demand is higher than the supply, for example, it is revealed that currently in Ghana, the demand for water is three times higher than it was in 2007. In 2007, the demand and the amount of water produced were between 81% and 71%, respectively (Adank *et al*., 2011). This is also the case of the study area where the demand for services was about to outweigh the supply. The AOT-WSMT Chairman confirmed that they have even stopped receiving new applications for private household subscribers because the system will not be able to supply.

> *Initially, about five years ago, we requested the community to connect the system at their houses, because there were very few subscribers ... but now, we have even stopped receiving more application for household connection. ..... Over here, every day, new people are coming in, so the demand is so high*[29].

The study found that the market and demand for water is a major factor for participation and sustainability. The findings are comparable to Sara & Katz (1998, p. 4) words that:

> The demand for water is an expression of value. A person's willingness to give up valued resources in exchange for a service indicates that the person values that service. If this value at the community level is greater than or equal to the cost of providing and maintaining the service, one can assume the community will be willing and able to maintain the service. In a community where the value placed on the service is less, it is likely that the community will not be willing to maintain the system over the long term.

6.3.8 Political Party Affiliation and Politics in Participation

What is suggested but not explicitly addressed in the literature is the underlying political party affiliation and meanings that influence the attitudes and behaviours of community

[29] WSMT Secretary

members in participating in community development projects. There is an assertion and emotional connection of members of the political party in power and non-members of ruling political party in relation to local community participation. From the analysis of this study, political party affiliation was treated as a dummy variable (1= Ruling, 0 =otherwise) to determine household participation in community water facility management. The variable has positive association and is significant at 1%. Arguably, the household (head) affiliated with the ruling political party or people with the same political identity are likely to participate in peri-urban community-based water management more than others. It increases the probability of participation by 0.022. However, political identity is not consistently related to participation when estimated separately for other ethnic groups (Lien, 1994).

The apparently poor performance of public water utilities resulting from political interference has been much discussed and debated in the literature (Robinson, 2003; Baietti *et al.*, 2006; Nickson & Franceys, 2003; Fragano *et al*., 2001; McGregor, 2008). This interference manifests itself in over-recruitment of staff for the utilities and failure to charge cost reflective tariffs as politicians usually want tariffs kept low, irrespective of the costs involved in the operations. Politicians' interference in community development projects is geared to gain and maintain their popularity. Research in political science, psychology, and sociology has also demonstrated the importance of group identity as a factor influencing household political behaviour (e.g., de la Garza *et al*.; 1992; Hardy-Fanta 1993; Jones & Vedlitz 1994; Tate 1991; Leighley & Vedlitz, 1999). The development of peri-urban community-based water projects, community participation and its sustainability can be linked with politics.

In development panacea, CWSA-facilitated community water projects, politics are not allowed to influence the programmes. In reality it is difficult to separate politics and community participation especially in social services. The CWSA official revealed that:

> *Politicians have affected participation of the community, they just promise, sometimes they find resources to put a system there, so they are actually working against the participation that the government strategy actually is building, ... along the line politicians will say vote for me and I will put this facility, so our type of party politics is unfortunately another very negative factor that [is] [sic] working against participation in water facilities in Ghana*[30].

The conventional water supply sector is particularly capital intensive. For such a low cost product of water services, politicians tend not to attract private investment and therefore require the intervention of government for the financing of capital investments. General reforms in the water sector have faced political interference especially reform suggestions that might take away political control of water services and these reforms are mostly resisted by politicians (Kingdom *et al*., 2005).

Despite the negative interference water supply services may have suffered from politicians, there are good points to note for the interaction between politics and water supply services. The laws governing the roles and responsibilities of both the water institutions and all stakeholders are made by politicians. These laws ultimately ensure proper and effective water supply governance by providing voices to the different segments of stakeholders and particularly consumers through their roles and responsibilities (UN-HABITAT, 2006). This power of the politician, when properly harnessed by adopting the appropriate strategies, should enhance improved water supply (Braimah, 2010).

[30] CWSA Official

6.4 Peri-Urban and City Continuum and Participation

From the findings of this study it can be concluded that the socio-economic relationships between the study area and Accra is a factor that may hamper local participation of peri-urban community-managed water supply. It was observed that many peri-urban community members have a close relationship with inner Accra city; hence they find that in the city of Accra, community members do not pay for capital, operation and water maintenance rather they only pay for the services. In addition, they even do not have community public meetings to discuss water issues hence peri-urban communities keep asking themselves why they should pay for capital, operation and maintenance cost which is even high than GWCL tariffs. As a result it seems there is double standard by government in providing social services to her citizens. Evidence from Senegal and Cote d'Ivoire have in addition shown that when compared to urban customers, community-managed water customers are not only better at paying their bills but are less likely to engage in theft or service fraud (Rogers, Silva & Bhatia, 2002). One of the interviewees said that:

> *also some people like me, some of them they always go to Accra city…[sic] it is unfair to us, I went to Accra nobody is paying for the facility, why are we paying this...., we don't understand, are we not a part of Ghana...*[31]

6.5 Forms of Local Community Participation and Continuum Model

This study has applied the continuum participation model for analysis of forms and levels of local participation. The discussion is based on how the communities were consulted,

[31] WATSAN Member No 3

represented and the type of community participation. Figure 6.1 describes the forms of community participation

Figure 6.1: Continuum of participation model, Adapted from Rifkin & Pridmore (2001).

According to the findings, the forms of local community participation practiced at the study area (refer Figure 6.1) falls into 5 different stages and these levels are: information sharing, consultation, placation, involvement and empowerment. At the first stage the communities were informed about the facility through the DA and the information was shared among the CWSA, DA and the community. However, it can be viewed that being informed does not mean that you are involved in decision-making. In the second stage which is consultation, the communities were consulted through an agent; the Maple Consult Company which was contracted for feasibility study of the entire community. Placation means that the local community being informed and consulted, but retain for the power holders the continued right to decide. For the case of involvement following the previous stages it is easy to say that all community groups and gender were involved. The last stage is empowerment, thus it is also simple to argue that they were empowered as all responsibility for operation and maintenance of the system facility is entrusted to the community itself.

This study found a new term or type of participation named packed community participation. Packed participation is exercised between the implementing agency and the

recipients/community beneficiaries whereby the implementing agency makes plans and then shares with community beneficiaries if they accept such plans. However, the decision to accept or not depends on the community priority, demand of service and need. For example the Ghana WASH official expressed that:

> *Frankly communities don't have a say, it's a national strategy, it is a packed participation strategy… they have to take it or leave it ... So when you are lucky or you are working in a place in which they have a track record of participation, and then it will be easier for you to work with them. Everything is being planned in the office, then we sell the plans to the community…, of course it is a parked participation*[32]..

While the CWSA official had a different views about it,

> *It must be noted that dealing with more than one community they are should be set of some principles or strategy; otherwise, sometimes excessive use of democracy could have a considerable drawback. So, it is not a 'parked participation' that is how we do, we have a number of communities to work with, we cannot spend more time at one community to do what they want*[33].

6.6 Sustainability of Community-Managed Water Facility

Sustainability of community-managed water facility is determined by so many factors or indicators. The factors or indicators may be governed by internal and external factors, organizations and policies (Bracht & Tousros, 1990). For example Well (1998), Harvey and Reed (2004) used four criteria to measure sustainability: effectiveness (functionality, quantity and quality), efficiency (financial, human and physical resources for service delivery), and replicability (expansion of the services delivered) and equity (vulnerability, poverty, gender and tariffs). Furthermore, Abrams, Palmer & Hart (1998; Mukherjee &

[32] Ghana WASH Official

[33] CWSA official

Van Wijk, (2003) identified eight indicators to achieving sustainability: policy context, institutional arrangements, financial and economic issues, community and social aspects, technology and the natural environment, spare parts supply, maintenance systems and monitoring. For example Sara and Katz (1998) used Demand Responsive Approach (DRA) indicators to evaluate the community water system.

However, many authors do agree with some common indicators. These are: physical conditions of the facility, consumer satisfaction, financial capacities and management, human resources capacities and effectiveness of water institutions support. These factors have also been adapted by the Government of Ghana for community water supply as stipulated by GSA through CWSA. For this study, the researcher adapted some key CWSA sustainability indicators, like physical conditions of the facility, effectiveness of community organization system, financial capacities and effectiveness of support for water institutions. The researcher used social perception to measure all the variables used to determine the sustainability of the facility.

6.6.1 Physical Conditions and Functionality of the Facility

Physical conditions and functionality of peri-urban community-managed water facility is the most common factor for sustainability. The study sought to examine the community perception of construction quality of water facility, service delivery and functioning of the water facility. Table 6.6 presents a summary of results of community's perception on sustainability of peri-urban community-based water management.

Table 6.6: Community's perception about sustainability indicators

Perception community Sustainability indicators	Percentage			Total
	Good	Neutral	Poor	
Construction quality of the water facility	83.4	11.0	5.7	100.0
Services delivery the water facility	83.6	11.8	4.5	100.0
Functioning of the facility	75.9	15.5	8.6	100.0

Source: Author's field survey computation, 2013.

The findings show (refer Table 6.6) that all the variables were marked good; therefore, it is reasonable to affirm that the AOT peri-urban community water facility is sustainable. Majority of community members were of the opinion that the facility construction was of good quality. On average of 84 percent of households reported services delivery were good. The main contribution that ensured durability of the water facility, service delivery and functioning of the facility were through Monthly Bill Payments (MBP) and Pay As You Fetch (PAYF), prompt reporting during interruption and participatory decision making. As argued by Khwaja (2004), the infrastructure performance of water system among other things are the efforts to engage community members in water infrastructure planning and must be balanced with the need for a project to be designed in accordance with sound engineering principles.

There is also evidence that the construction of good quality water facility and household involvement in decision-making were both associated with indicators of better water system performance and sustainability (Prokopy, 2005). Moreover, the infrastructure performance needs preventative maintenance and regular repair services. But at the community level, once water is flowing throw the tap then they are satisfied with the infrastructure performance level. This was confirmed by an interviewee:

> *...however, we have so many problems and challenges in our facility, like power cut off and defaulters..., but since water are [sic] flowing it is ok, and we are happy ...*[34].

Examining the physical conditions of the facility needs technical measuring and skills. Socially, physical conditions can be measured by people's perception and functionality of the system. Water and sanitation management team revealed that the functionality rate and performance of the system was good. In order to ensure and maintain good functionality rate and performance, the system manager was given 5 litres of fuel every day for technical and operation field visit to provide prompt emergency services. The technical and operation field visits had facilitated monitoring and ensured on time stand-pipe vendors to their work stations. WATSAN treasures received water sales based on metre readings and make deposits into the Board's accounts every three days. The data indicate that one year prior to the study, only 4 times the community had experienced an interruption in their water services that generously took an average of 3 days to repair. Generally, the facility was always functioning or had only a short breakdown time. The findings support the findings of Alegre (2006) that among other factors of sustainability of water infrastructure system is the availability of water in the tap.

6.6.2 Financial Capacities, Transparency and Accountability

The sustainability of community-managed water facility is determined by how the management and monitoring institution is committed to manage, utilize the available resources and be cost conscious. However, in many water supply systems, financial

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34 WATSAN committee member

resources are advocated to be the critical factor that influences the others. The findings from this study show that the organizational system at community level is effective for financial management. The WATSANs and WSMT were given training on financial management but also are helped by the employed professional accountant staff. Not only that, but also there are 6 area mechanics trained to deal with some small technical system issues and are given mobile phones for emergencies, but they are not part of the project staff. Above 60% of community members realized that the organization system was strong enough to work with sustainability challenges. Furthermore, community members trusted the management team because no one has been removed before the completion of her/his term of office.

CWSA-facilitated water systems tariffs are administered by the WSMT assisted by WATSAN Committee. The present water tariff of 10Gp (per 17-litre bucket) being operated during the study time is the results of tariff review that took place in 2014. In the study area, PAYF is a method used to collect tariffs at public fetching points and has proved to be the effective, efficient and appreciable collection. The MBP is used for private household subscribers. Nevertheless, it was evidenced that although there are defaulters in MBP, the sales are more than the sales collected through PAYF. On average of 78% of the monthly revenues are from MBP against 22% collected through PAYF. MBP collection is the one that makes the system more sustainable than PAYF sales, without MBP the system could not have been sustained. Table 6: 7 indicate the monthly revenue through MBP and PAYF for the 7 months (January-July, 2014).

Table 6.7: Monthly revenues of MBP and PAYF

MONTH	MBP (GH¢)	%	PAYF(GH¢)	%	TOTAL
January	41,307.11	77.21	12,192.00	22.79	53,499.11
February	23,615.58	83.94	4,518.00	16.06	28,133.58
March	21,413.10	78.09	6,007.00	21.91	27,420.10
April	29,853.96	74.54	10,198.00	25.46	40,051.96
May	29,500.24	78.5	8,080.50	21.5	37,580.74
June	27,507.51	73.6	9,867.50	26.4	37,375.01
July	21,523.76	82.3	4,629.00	17.7	26,152.76
Average	27,817.32	77.82	7,927.43	22.18	35,744.75

Source: Researcher computation, 2014.

The system has so far been operated with cost recovery without any external support (see Figure 6.2). Expenditure level (maintenance and operations) has been less than income level.

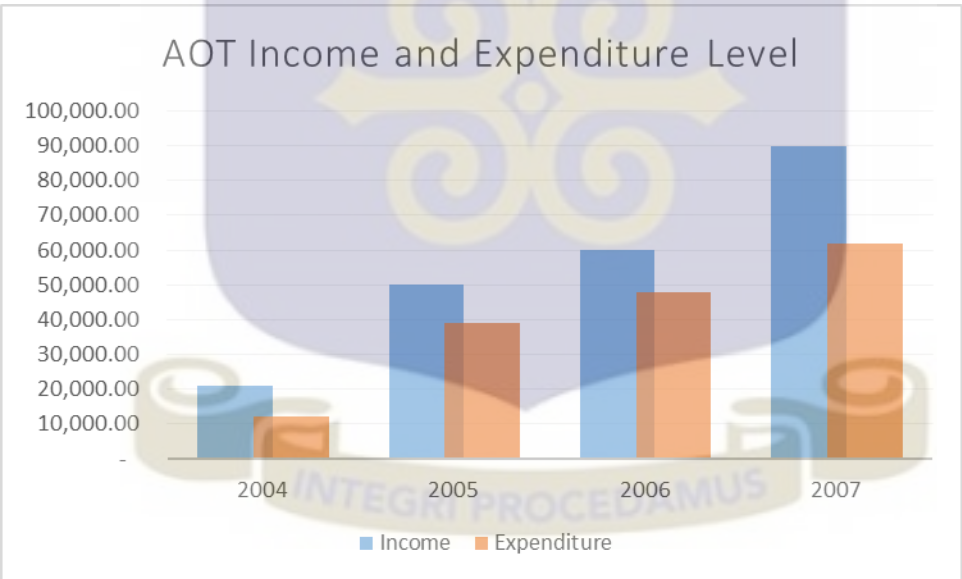

Figure 6.2: AOT income and expenditure 2004-2007 (AOT Project Report, 2008)

As the Figure 6.2 shows, the system has a financial capacity for sustainability. This has been possible because of a number of factors:

- WSMT-staff are not entitled to monthly salary. They are given some light (a token) allowances at the end of each quarter.
- WATSAN members are working under volunteer basis, but they are given some allowances.
- High demand for affordable water services with and willingness to pay for the service.
- The number of private subscribers is high, thus contributes more money than public stand pipe points.
- Vendors are paid a commission 20% of the sales, which is very minimal, like 'volunteerism work'.
- Effective control of illegal connections.
- Good source of water (intake point).

The findings revealed that, if for some reason a vendor incurs losses; such losses must be incurred from his or her own pocket. Or it will be deducted from his or her commission at the end of the month. Principally, the sales collected must tally with the meter-reading unit. Also, they are not allowed to sell water on credit. The vendor is paid a commission of 20% of sales. However, the CWSA-facilitated system tariffs seem to be higher than the GWCL tariffs. For example CWSA-facilitated public stand pipe tariff is 5.00 GH₵ for 1m³ which is 50 buckets, each bucket costs 10 pesewas, the private household subscribers is 4.18 GH₵ for 1m³ plus 2% and 1% for system expansion and firefighting respectively. Meanwhile the GWCL system user between 0m³ and 5m³ pays 2.981 GH₵ per m³ and users above 5m³ pay 5.073 GH₵. It is argued that, although the community pays higher

tariffs than the GWCL service but they are guaranteed of "24/7"[35] service of water and it is not intermittent whilst the GWCL supply is intermittent. Not only that, but also the GWCL tariff is subsidized by the government. It can be noted that since the system started operation in 2004 the income and expenditure have been increasing in parallels, while the capital facility remains constant (borehole and reservoir). The increase of the project revenue was due to the increase of both household and non-household subscribers. It was revealed that the project reached at maximum production. This indicates that the system can no longer be extended. Revenue (sales) will remain constant while expenditure will be going up, hence sustainability might shake.

6.7 Service Level Delivery Indicators of the AOT Facility

As earlier mentioned, the researcher used the National Ghana Standards Authority (GSA) guidelines and standards for drinking water quality and service delivery with which all registered service providers must comply. However, the mandate to enforce these guidelines is under CWSA. Table 6.8 indicates the CWSA service level delivery.

Table 6.8: CWSA service level delivery

Service Level-Sub-indicator	**Benchmark**
Quantity	Hand pump/standpipe: 20 litres per capita day. House connection: 60 litres per capita per day
Quality	Ghana Standards Authority water quality standards for drinking water
Coverage	Hand dug well: maximum 150 people per facility. Hand pump/standpipe: maximum 300 people per facility
Distance from water point	Up to 500 metres
Reliability	The facility is providing water for at least 95% of the year, interpreted as at least 345 days of regular service, without interruption.
Share of population having access to standpipes to house connections	Population 2,000 – 5,000: 1 0 – 20% Population 5,001 – 15,000: 1 5 – 25% Population 15,001 – 30,000: 20 – 30% Population 30,001 – 50,000: 25 – 40%

Source: CWSA (2014).

[35] The service is available 24 hours of the 7 days of the week

In determining the service delivery level, indicators such as measure of sustainability, the researcher used the same variables (refer Table 6.9) to test whether AOT peri-urban community-based water management system comply with CWSA-guidelines as determinants for sustainable facility.

Table 6.9: Indicators for the service level delivery of the study area

Indicator	Obs	Mean	Std dev	Min	Max
How many times has the facility broken down in the past 12 months?	201	4.33	4.62	0	20
How long does it take to fix or repair (hours)?	189	4.66	4.07	0	30
How many times has water quality been tested in the past 12 months?	161	3.51	2.49	0	8
How many days in the past three months did you not have access to water?	98	3.79	4.48	0	20
What is your daily average water utilization (household non-subscribers)? (Baskets)	157	5.50	3.05		
What is your daily/monthly average water utilization (household subscribers)? (M^3)	246	12.10* 6.60**	8.43* 4.60**	1.8* 1**	38.5* 21**
How much do you spend daily on community water facility for household water use[36]?	177	0.57	0.268	0.10	1.40
Distance to water point	191	237.60	188.60	30	850
Hours used to get in the water facility	191	7 min	7.19	1	60
Hours used to fetch water	191	19min	19.94	1	120

Source: Author's field survey computation, 2013. Note that: *= (Basket cubic unit, 17L) daily, **=Meter cubic, M^3) monthly

The results as indicated in Table 6.9 were used for comparison with the CWSA guidelines service level indicators. It can be noted that only the standpipe and piped sources of water were observed. Table 6.10 shows the comparison between CWSA-guidelines service delivery indicators and study area service delivered. The results from

[36] The total daily amount spent for water was captured from the individuals who depend on public water points sources.

the field are almost the same as CWSA guideline standards. However, there are slight variations. For example, water utilization at standpipe points seems to exceed the described guideline standards with an extra of 3litres, while for household piped subscribers it is less by 9litres per capita a day, any extra utilization may be from other sources of water. The study found that the time scheduled to access water at a standpipe is in the morning and evening, so in between there are no services, thus in that particular time they depend on alternative supply, such as water tankers. Ampadu, (forthcoming), found that in the community-managed systems in the peri-urban communities the average capita water use was found to be about 11-15 Ipcd, this is also an evidence that vast majority of households depend on alternative sources for their water supply.

Table 6.10: Comparisons between CWSA and study area service level guidelines

Service level-CWSA guidelines (benchmark)		**Service level at field study**
Quantity	20 litres per capita (public water points)	5.5(Buckets)*¹ buckets 5.5@17=93.5/4*=23L
	60 litres house connection	12@17=204/4=51L
Quality	Water should be tested twice a year	Were done 2-3 times a year
Coverage	Standpipe max 300 people	<300 people per facility
Distance from water point	Max 500M	Approx 800M
Reliability	95% the facility should provide water, at least 345 days a year	Max 20 days a year the facility did not provide water
Share of population having access to standpipes to house connections	Population 2,000 – 5,000: 1 0 – 20% Population 5,001 – 15,000: 1 5 – 25% Population 15,001 – 30,000: 20 – 30% Population 30,001 – 50,000: 25 – 40%	Only 20% private household subscribers

Source: Adapted from CWSA (2014). Note: *¹ indicates household water utilization and *indicates the household size at the study area.

After making the comparisons, the researcher used the CWSA standard service level to determine the service level delivery at the study field. Table 6.11 indicates the types of service level delivery as stipulated by CWSA-guidelines.

Table 6.11: Level delivery CWSA: Types of service

Service Level	Description of Service Level
IV	The piped scheme provides service as per design standards for population category and meets all the sub-indicators
III	The piped scheme provides service as per design standards for population category but does not meet one of the sub-indicators
II	The piped scheme provides service below design standards per population category and fails to meet one or more of the sub-indicators
I	Facility is non-functioning

Source: CWSA, 2014.

From the Table 6.11 the researcher concludes that the service delivery level at the field study falls under service category III that "the piped scheme provides service as per design standards for population category but does not meet one of the sub-indicators". It can be noted that the service delivery level outlined is a minimum or basic service delivery level. The sustainability of AOT peri-urban community-based water management facility is at risk to fall into service delivery level II.

6.7.1 Water Services and Community's Satisfaction

Apart from water flowing through the tap, satisfaction with water services delivered is also determined by social perception that under normal circumstances cannot be objectively measured; rather, it is subjective with regards to household level and amount of satisfaction. This study used a total of ten (10) different indicators to measure community's satisfaction with water services delivery. To check how the indicators were in meeting the needs of the community, the respondents were asked to comment on their

satisfaction with services delivered from the water system. The results are presented in Table 6.12

Table 6.12: Variables for water services and community's satisfaction

Described satisfaction with services delivered	**Response**			**Total**
	YES	NO	Don't	
Accessibility	87.7	11.1	1.2	100.0
Reliability	77.3	21.5	1.2	100.0
Equitability	82.3	13.6	4.1	100.0
Pressure rate	81.1	14.8	4.1	100.0
Quantity	79.4	14.8	5.8	100.0
Distance	73.5	19.3	7.1	100.0
Taste	63.2	26.0	10.7	100.0
Color	71.8	26.1	2.1	100.0
Safe	68.8	25.4	5.8	100.0
Clean	68.6	26.5	5.0	100.0
Average	75.3	19.9	4.7	100

Source: Author's field survey computation, 2013.

Generally, the communities were of the opinion that they were satisfied or the water system was meeting their expectations at an average of 75% satisfied with services delivered, 20% of the study respondents were dissatisfied with services delivered while only 5% were neither satisfied nor dissatisfied. This proportion has a close proportion with the National standards that stipulates that at least the consumer should be satisfied with the services delivered by 95% (CWSA, 2010). Abrams (2001) added a point of continuity that if consumers can turn their taps off all of the entire life span of the facility and receive a water flow and quality as good as the day the system was commissioned then the service is satisfactory and the system is providing sustainable water supply. However, in terms of quantity and reliability, the demand for water services has tripled more than the five years ago and there is a higher number of subscribers of water in

evening times than in the morning and afternoon. The system has a limit to the amount of water to yield (50 M^3/hr), so if the demand exceeds the limit, the water cannot flow.

6.8 Relationship between Local Participation and Sustainability

Determining the relationship between local community participation and sustainability is a challenge because it is a two-way directional traffic. This means that community participation can lead to sustainability or sustainability can lead to community participation. This study, however, focused on a one-way direction. Table 6.13 indicates some variables to authenticate the relationship between local community participation and the sustainability of peri-urban community-based water facility.

Table 6.13: Relationship between local participation and sustainability

Factors for relationships	Frequency	Percentage
Ensures sustainability due to local ownership	47	19.2
Local participation makes local people to accept the project	38	15.5
Local participation enabled willingness to pay as you fetch	12	4.9
Ensures logical flow of information	4	1.6
Ideas from local people are shared to sustain the project	2	0.8
There is relationship in many ways	29	11.8
Either partial or no relationship	44	18.0
Don't know	69	28.2

Source: Author's field survey computation, 2013.

The majority of the respondents (54%) revealed that local participation ensures sustainability through local ownership, acceptance of the facility, willingness to pay, logical flow of information and shared ideas. A small number of respondents (18%) revealed that there were either partial or no relationship between participation and sustainability. Contrary to the results few respondents (28%) seemed not to know whether their participation has any impact on the sustainability of a facility. This can be

argued that individuals have a different attitude, perception and the way they articulate participation and sustainability.

Vroom (1960, p.7) argues that community participation in facilities which are compatible with their demand lasts longer than those whose demand are incompatible with the facilities in which they participate. It is right to assume that projects that are organized through local community efforts tend to receive continued support for operation and maintenance for the whole of their entire life span. This argument was confirmed by one of the interviewees:

> *Over here, we have people who are rich, sometimes when there is a problem and water is not flowing they pay [with][sic]their own money to fix it*[37].

Scholars like, Birkeland, (1999); Ife, (2002); Young, (1997) and Fraser, (2005), recognize the importance and advantages of local participation in sustainability. The findings of this study concur with such literature. Furthermore, satisfaction with water facilities is likely to encourage further community participation towards financing operation and maintenance. One of the interviewees confirmed that,

> *Our communities are really satisfied with water reliability; I think we are doing our best. They would tell you that we are more reliable than Ghana water. That one is for sure. When the things break or the power surges, we have generators. When water is not flowing, you will see them coming here to the office complaining. We have few cases of bill defaulters*[38].

The qualitative data show that the first sign of the relationships between local community participation and sustainability is an increased awareness and sense of facility ownership. For example, the Project System Manager said that:

[37] WATSAN Secretary

[38] Project System Manager

> *I think that community water is more sustainable because when we get the pipe burst, people come rushing to the office or they would pick up the phone and call us. The moment we are informed, we try to shut/stop the cork and try to mobilize materials to repair it but, Ghana water, sometimes; it has been running out from morning to evening no one cares*[39].

However, it should be noted that the community-based water facility is monitored and managed by the communities themselves but legally owned by the DA that is given rights to use under the trusteeship of WSMT.

Secondly, local community participation in water management helps to enlist the commitment of the participants to handle, care and provide security for the system. It was revealed that whenever there is any fault or breakdown the community knows where to report and they have telephone numbers of the area mechanics and the WATSANs,

> *It is not like the Ghana Water Company if there is faults many people do not know where to report, and even when reported it takes more than 5 days to fix it, because no one cares about it*[40].

6.8.1 Community Contribution for Capital Cost and Sustainability

In Ghana, CWSA policy stipulated that 5% contribution from the community for capital cost as an indicator for water services demand and commitment (GoG, 2007). The contribution of 5% of the capital cost has been debated for a while. There are two schools of thought. One side argues that the contribution of 5%, has impact on the sense of ownership and sustainability, while the other side is against the argument. There is still no consensus on the argument. It has been argued that when local communities pay around 5% of the capital cost of their water facility in addition to paying all recurrent cost

[39] Project System Manager

[40] WATSAN Secretary

of operating the system such communities would be committed to sustainably maintaining the facility (WB, 1994). But this has been challenged by Fuest (2006), that such principle has neglected the poor who cannot afford to pay for recurrent costs. Furthermore, Braimah and Franceys (2009) have challenged the claim especially for towns in the Northern Regions of Ghana where towns are unable (or unwilling) to raise the 5% capital cost contribution and the District Assemblies have had to step in to pay all or part of that amount.

In the study field, there were also different perceptions about the payment of 5% of the capital cost. There was a group that supports the argument that the contribution of 5% has an impact on community's commitment and sustainable facility and the other group that was against the argument. The DDO expressed that:

> *So we levied each community to pay the 5% of the capital cost. By so doing, if they put in their money, they will be able to manage it because they know their money is in it but should it come straight from the government, they know it's the government's money so my money is not there so they wouldn't bother about it but since their money is there, now they are able to manage the facility and when something is going wrong they will take care of it*[41].
>
> *Because the community once they are made to understand that, that is mine, my share is in it and so I wouldn't sit down and look at an individual or someone to destroy it because they contributed that is the reason why CWSA made it a point that they must contribute. But in the others if their penny is not into that project they won't care*[42],

The second group argued that: there are some cases, where few rich people paid the 5% on behalf of the community. In addition, it was illogical for people who migrated to a

[41] District Development Official

[42] District Engineer Official

place where there is a community-managed water system and were not there during the implementation stage. The District engineer confirmed that:

> *Those days, we used to look at it as a kind of commitment but I think that the thinking and the argument is that there are communities that really can't afford it and have difficulties raising the money. You would most often find that communities that were not able to raise that money quickly, some rich citizen helped them. The argument is that in such a way you can't say that their ability to pay for capital is a real reflection of their commitment*[43].

The government of Ghana has removed the 5% contribution as a condition for Demand Responsive Approach. It was argued that the urban dwellers don't pay the contribution for capital cost, so they didn't know why rural and peri-urban pay for it. The Demand Responsive Approach is assessed through feasibility study that is normally conducted by private consultancies.

6.9 Conclusion

In this chapter, I have presented the results and discussions of the scope of local community participation in peri-urban community-managed water system. The findings indicate that there was high participation before the water started flowing more than after the completion of the project. Local community participation in public meetings was low compared to the mobilization stage. Local community participation in decision-making especially during the planning stage was low as well, since the implementing agency only shared with the community already designed and planned. Using logistic regression model, the study explored the determinants of local community participation in water management and the results show that the following variables are positively associated

[43] District Engineer Official

and significant: age of a household, indigenous status, household size, trust, demand for services and political party affiliation. Education, local beliefs and social status are negatively associated but they are significant. The variables age, gender, income and social networks have positive relationship but were not significant. Only religion as a variable is negatively associated and not significant.

Furthermore, the chapter presented the results and the findings of the relationships between local community participation and sustainability of the peri-urban community-managed water system. Using the basic CWSA-guidelines to determine the sustainability of AOT community water supply facility, the study concludes that the system complies with the Ghana Standards Authority principles, however falls short in distance and water utilization for household pipe subscribers. In general, there is a clear relationship between local community participation and the sustainability of peri-urban community-managed water system.

CHAPTER SEVEN: ROLE OF WATER INSTITUTIONS IN THE SUSTAINABILITY OF COMMUNITY-MANAGED WATER SUPPLY SYSTEM AND POLICY IMPLICATION

7.1 Introduction

This chapter presents the results and discussions on the role of water institutions and their impact in the sustainability of peri-urban community-managed water supply system. The respondents were local community and water stakeholders that included officials of government, Non-Governmental Organization and water research institutes. The presentation of results and discussions are based on the following themes: effectiveness of WSMT and WATSANs in peri-urban community-based water management, the role of government agencies (CWSA and DA), the role of donors & NGOs and private water sector participation and last but not the least, it presents and discusses the results and findings on water sector involvement and sustainability of peri-urban community-based water supply system. The chapter also discusses the relationship between private sector involvement and sustainability. Finally, it discusses policy implications for peri-urban community-based water management.

7.1.1 Effectiveness of WSMT and WATSANs in Peri-urban Community Water Management

The effectiveness of WSMT and WATSANs in peri-urban community-based water management is determined by many factors, however, the most important factor is their levels towards successfully resolving the problems and challenges of the system. Table

7.1 presents the summary of results of the question 'when WSMT and WATSANs are presented with crucial problems of water issues, what is the usual outcome?'

Table 7.1: Effectiveness of WSMT in community water management

Effectiveness of WSMT and WATSANs	Frequency %					Total
	0-20	21-40	41-60	61-80	81-100	
Successfully resolved	15.1	21.4	23.2	25.8	14.5	100.0
Not always	23.2	32.1	18.8	17.8	8.1	100.0
Staff often thwart	29.4	29	15.8	14.1	11.7	100.0
Always lukewarm	29	32.1	17.4	12.1	9.4	100.0
Unsuccessfully	34.4	25.1	20.3	12.5	7.7	100.0

Source: Author's field survey computation, 2013.

The community members were asked to rate the effectiveness of WSMT in community water management in percentage ratings from (0-20 up to 81-100) that indicated how they successfully resolve any problem that arises (refer to Table 7.1) on the scale.

The findings show that WSMT are capable and effective in successfully resolving crucial problems relating to water issues. Furthermore, the results show a greater percentage of 34.4 and 25.1% rated small scale between 0-20 and 21-40% respectively more than the small percentage that were rated high scale 12.5 and 7.7% between 61-80 and (81-100% that WSMT were unsuccessfully resolved problems when presented.

In the study area, the WSMT was constituted of WATSANs members who were elected from the three communities. The WATSANs and WSMT members were given regular management trainings facilitated by CWSA. The water committee were responsible for a number of management functions, including resolving conflicts among water users, contacting area mechanics, collecting and keeping of financial records for the water point and financial control. However, the management team comprised of employed staff that run all the daily activities of the project. In principle, the employed members of staff are

recruited by the WSMT. The system manager is the overseer (in-charge) of the water system. The management committee revealed that since inception, the project had not received any monetary assistance for repairs, maintenance, or management from any institution. Arguably, competency and professional staff with effective WSMT administration are the main factors for successful peri-urban community-based water management.

The research found that there was no cordial relationship between the employed staff and the WSMT. The project staff complained that the WATSANs members do not do anything, while the WSMT spend a lot of money for committee meetings; because once they meet they are paid some allowances. One of the interviewees confirmed the argument by expressing that:

> *You see, these people (WSMT) work on voluntary basis, they are only paid allowances, so sometime they meet even if they don't have an important issues to discuss….they just want to justify their allowances. They spend a lot of money; I would rather suggest reducing the number of WSMT members of the project*[44].

There is also lack of appropriate mechanisms and system to make effective relationship between the WSMT and the DA. The WSMT derives its authority from the DA and thus requires approval for major decisions such as setting water tariffs and signatory for investment bank account. Consequently, the DA can institute some incentive mechanisms to ensure that the WSMTs perform but there is no by-law in place governing the two. For example, the WSMT member revealed that:

[44] Project Accounts Officer

> *Many times we ask for approval of our water system and budget, but they never respond. Worse enough, at the DA they don't have a specific staff dealing with community water system. They are taking us back*[45].

The findings support the argument of Reed (1997), that power distance is the manner in which power is distributed in an organization. Power and power relations between WSMT and system manager is a crucial issue for facilities sustainability. Francesco and Chen (2000) argue that power distance and management practices play a role in the influence of participation on organizational commitment, job satisfaction, performance, sustainability and even on the intention of staff to stay in the organization. Project employees' perception about power and power relations on daily basis has been found to be significant in the successful management of peri-urban water facilities (*ibid*).

7.1.2 The Role of Government in Sustainable Peri-urban Community-Managed Water Supply System

The role and responsibilities of the Government to provide social services to her citizens is essential for the sustainability of the services delivered. It should be noted that DA and CWSA are the most crucial government agencies that are responsible for community water supply. Respondents were asked to rate the extent of government support of the following as described in Table 7.2.

[45] WSMT Member

Table 7.2: The role of government in sustainable community-managed water facilities

Description	Percentage					Total
	0-20	21-40	41-60	61-80	81-100	
Support capital cost for the facilities	11.8	17.9	9.1	32.9	28.3	100
Maintenance and rehabilitation e.g. pumps	20.1	28.6	22.7	15.8	12.8	100
Operation	21.0	29.2	20.2	18.9	10.7	100
Harmonization of local participation	18.7	28.5	17.9	23.0	11.9	100
Support other community projects	20.1	29.1	21.4	18.0	11.4	100
Facilitate technical experts and trainings for facilities	16.1	26.9	20.9	26.7	9.4	100

Source: Author's field survey computation, 2013.

It was observed that, the community members assessed the role of government in supporting capital cost for the water supply system on a percentile range from (0% to 100%). As shown in Table 7.2, the majority of respondents did appreciate the role of the government in supporting the capital cost of AOT community-based water supply system. Although it is the donor agency (DANIDA) through government that contributed 90% of the capital cost, the majority community members thought that it was the government that did the contribution. The community members were informed about the support granted by DANIDA but they did not see any staff from DANIDA directly involved with the communities during implementation.

Furthermore, majority of the community members do not really appreciate the contribution of government for operation and maintenance because after inception of the project, all costs are financed by the community members. The government revealed that, financial viability and priority for water services are challenges for them. The CWSA noted that it is not true that the government is apathetic to support, offer assistance in the delivery of good water services to its peri-urban communities but due to incapacities of

financial resources, it has to prioritize other communities that do not have water at all rather than maintaining the existing systems. A government official supported this argument:

> *Unfortunately, sometimes post monitoring and evaluation, we also don't have funds for that. There are communities that don't have the water and we are thinking of how to get funds for them. If you get funds, would you use it in doing post monitoring?*[46]

It looks like the government is putting more efforts into constructing new systems and neglecting the existing systems. The other challenge in financing water projects is the dependency syndrome. For example, in Ghana it has been revealed that about 99% of water projects are funded by donor agencies (GoG, 2010). The annual government budget allocated to the water sector has not been proportional to the budget requested by the sector. Also the budget approved does not reveal or support the demand for the expansion of the existing and new water systems per population growth. Table 7.3 indicates Ghana national budget allocated to water sector, 2006-2010.

Table 7.3: Budget allocations to Ghana water sector, 2006–2010

Description of fund type	**Annual budget amount (in US$' 000)**				
Year	**2006**	**2007**	**2008**	**2009**	**2010**
Grand total	191, 366	170,236	102,802	173,395	120,124
Annual GDP	12,553,611	15,100,151	17,055,342	16,365,700	19,622,194
WSS allocation as % of GDP	1.5	1.1	0.6	1.1	0.5

Source: Water and Sanitation Program (2011).

[46] CWSA official No 2

7.1.3 The Role of District Assembly in Community Water Supply

District Assembly is among the key stakeholder water institutions for peri-urban community-managed water supply system. It has the responsibility to ensure that service standards and sustainability of the water supply systems are met. Table 7.4 shows the results of the role of DA in community water supply as presented.

Table 7.4: The Role of DA in community water supply

The role of DA	Frequency	Percentage
Very effective	50	20.4
Effective	118	48.2
Disappointing	40	16.3
Very disappointing	26	10.6
Don't know	11	4.5

Source: Author's field survey computation, 2013.

The findings indicate that more than 60% of the respondents have the opinion that DA was effective as against less than 30% who indicated that DA roles were disappointing. It revealed that the DA does not have any specific official staff responsible for community water; rather there is District Water and Sanitation Team (DWST) that is made up of district engineer, district environmental health officers, and the district community development officers.

The decentralised agencies of the DA form the official government institution at the district level; it is the institution that links the community at the grassroots level to the central government. It has the responsibility to ensure service standards are met and the facilities around the administration boundaries are sustained. The DAs have the role to provide technical and financial support to the community development in their areas. For instance, Article 241 of the 1992 Ghana Constitution provides that DAs can source their own funding for their development projects (GoG, 1992). There is limited literature

explaining District Assembly having funding on their own for developmental projects (Braimah, 2009). In some circumstances, however, the DA provided some assistance to them like technical support, but not a financial support. The District engineer regularly pays visits to the project site and provides technical advice to the system manager.

The DA was expected to support peri-urban community water supply facilities through mobilization of Internally Generated Funds (IGF). The general trend indicates that Ga East Municipal assembly is raising limited revenues from local licences for businesses, rent and taxes. It is in this context Ga East municipal is dependent on external resources from central government including, District Wide Assistance Programme (DWAP) and District Assembly Common Fund (DACF) to provide services to communities.

It should be noted that these external inflows or support from central government are always unpredictable and do not come in time. Additionally, when such transfers are made, the transfers are insufficient to cover and discharge the full scope of the responsibilities. There is a gap among providing constitution, policy document translation and implementing it at all levels of governance (Malen & Knapp, 1997; Midgley & Richardson, 2007).

7.1.4 Community Satisfaction with DAs Support

However, the survey results show that the DA was effective in decision-making but when it comes to financial support and responsibilities, the situation was different. The AOT community project has an investment bank account with two signatories (WSMT and DA). This bank account is supposed to be used for capital investment and big maintenance. The study found that sometimes the WSMT may try to help itself for better

service provision and extension but it was discouraged by the DA because sometimes purchases have to be approved by the DA for communities. The approval takes a long time to get feedback, and sometimes they never even get any feedback. The community confirmed that it was dissatisfied with the government assistance especially in operation and maintenance accounts. A DA official and another interviewee confirmed this complaint, that sometimes they do not perform as they are supposed to do.

> *The weakness we have is ...., we do not render accounts to the community constantly. At least every year we should be able to render an account but for some time now we have not been able to do. That is where we are falling short*[47].
>
> *The role of Municipal assembly or DA level is very weak in providing support for communities to create and manage their facility for everybody and they are called to participate fully*[48].

7.1.5 The Role NGOs in Sustainable Community-Managed Water Supply System

The role and participation of donors and other NGOs in peri-urban community-based water management varies depending on various factors including, the nature of geographical area and type of technology of the system. Respondents ranked the roles played by donors and other NGOs in terms of supporting capital cost of the water supply system, maintenance and rehabilitation, operation, harmonization of local participation, support other community development projects and facilitating technical experts and trainings, advocacy and lobbying. Table 7.5 presents summary of results.

[47] District Development Official

[48] Ghana WASH Official

Table 7.5: The Role of Donors and other NGOs in sustainable community-managed water facilities

Factors	Percentage					Total
	0-20	21-40	41-60	61-80	81-100	
Support capital cost for the facilities	31.9	25.2	20.2	11.3	11.4	100
Maintenance and rehabilitation e.g. pumps	31.7	25.7	21.5	11	10.1	100
Operation	31.4	27.5	24.2	8.5	8.4	100
Harmonization of local participation	34.2	25.6	18.8	11.5	9.9	100
Support other community projects	30.2	28	23.3	9.5	9	100
Facilitate technical experts & training for facilities	34.2	29.5	18.4	9	8.9	100
Advocacy and lobbying	34.4	27	18	9	11.6	100

Source: Author's field survey computation, 2013.

The results indicate that the role of donors and other NGOs were not visible or very low as more than 60% respondents ranked low this variable, whereas less than 30% ranked it high. Even though 90% of the project capital and feasibility study costs and initial trainings for WATSANs and WSMT were funded by DANIDA the majority households did not realize its substantial contribution because most of the donors and NGOs do not have a direct link with communities, they work with the government. Evidence showed that peri-urban community-managed water supply projects are able to generate income for operation and maintenance. However, it falls short of system expansion and replacement.

7.1.6 The Role of Private Water Sector in Sustainable Community-Managed Water Supply System

The role and participation of private water sector in peri-urban community-based management varies depending on the nature of the institution and type of the services rendered. The study sought to determine their roles in construction, maintenance and rehabilitation of the system, operation, facilitation of trainings and harmonization of local participation. The role of private sector was measured by ranking from 0% to 100% with an interval of 20%. If more than 50% respondents reveal the ranking below 60% then the role of private water sector is not recognised but if it is above 61% then it is recognised. Table 7.6 presents the summary of results.

Table 7.6: Role of private water sector in sustainable community water supply system

Roles of private sector	Percentage					Total
	0-20	21-40	41-60	61-80	81-100	
Consultations for rehabilitation and maintenance	14.5	14.1	16.7	50.1	4.6	100
Water supply service (Tanker)	47.9	14.6	14.5	16.7	6.3	100
Operation	47.4	17.3	18.6	11.2	5.5	100
Construction of water infrastructure systems and facilitating training	8.9	17.2	17.5	49.2	7.2	100
Harmonization of local participation	47	17.2	20.2	9.3	6.3	100

Source: Author's field survey computation, 2013.

The finding indicates that the role of private sector in providing consultation, maintenance and rehabilitation for the community water was highly appreciated; about more than 50% of respondents ranked between 50% and 5% and 61-80% and 81-100% respectively. Also, private water sector had engaged much on construction and extension

of water infrastructure system and facilitating trainings for water supply system staff. This is because maintenance and rehabilitation, construction and extension and facilitating training need some technical skills and professionals. On the other hand, the role of private sector in the provision of water service (Tanker), harmonization of local participation and support of other community development projects were minimal. This is because the peri-urban community-managed water sold cheaper than the water tankers. In the study area, the majority of the community members depend on community water system as their main source of water because of reliability and cost compared with other sources of water.

The AOT water project identified some local area mechanics that can provide prompt assistance when there is a break down. The private enterprises have also been contributing to the extension of water services and sanitation systems and have been involved in the construction of small dam reservoirs for the rural population. In the study area, the private sector is not contracted through system management operator rather it has been contracted into multiple contracts activities. The contracts can be divided into two levels. First, is at regional level, where the contracts are signed between the private sector 'render of service' and CWSA. The second is at the community level between the private sector and WSMT on behalf of DA/MA. In the study area, the project identified three mechanics that can be consulted for any interruption and regular repair and maintenance. Private firms are only contracted for major repairs and technical issues. Also private firm that are contracted by the WSMT do the connections for private subscriber. But it was revealed that contracting professional private companies was more

expensive than private smaller technicians. For example, the system manager was of the opinion that:

> *Private smaller technicians have been helpful especially in the maintenance of the pump house gadgets. We call them and at worse within 24 hours, they are there to do repair work. Their charges are reasonable as compared to the big professional companies. So, we tend to use the smaller technicians because they are quite reliable and cheap*[49].

It is the view that private sector among others can contribute sustainability for peri-urban community-managed water systems through providing and fixing strong spare parts, facilitating training of new skills and technology for the systems.

7.2 Water Sector Agencies Involvement and Sustainability of the Community Water Supply System

After an analysis of the case study and their degree of private sector involvement in peri-urban water supply services, the study establishes that there is a strong relationship between their involvement and sustainability. However, as it is argued by Koestler & Shaw (2009) in communities where there is booming income and commercial activities, the degree of private sector involvement is high and the relationship is more formal. The social and economic status of the community is linked with the degree of private sector involvement. The private sectors are likely to work closely with a community that has high socio-economic status because they are assured to be paid for the services provided. The socio-economic conditions and the income of peri-urban communities are likely to be higher than rural communities. For example, in the study area the average annual household income was around GH₵ 6,600.00 that is actually higher than the annual

[49] Project System Manager

national average household of GH₵ 1,217.00 (GLSS, 2008). It is in this argument that private water sector involvement is also likely to be high in peri-urban than rural areas. The relationship between the degree of private involvement and sustainability in community-managed water system seems to be more noticeable in complex systems (piped system) that in most cases need technical skills and professionals. But for hand-pumps the relationship cannot be noticeable, it is because the technology is not complex as the piped system and so far it may also increase running costs for operation and maintenance. Although, other factors come into play, the financial capacity of the project is a major factor. The relationship between sustainability and degree of private sector involvement can be simplified in Figure 7.1.

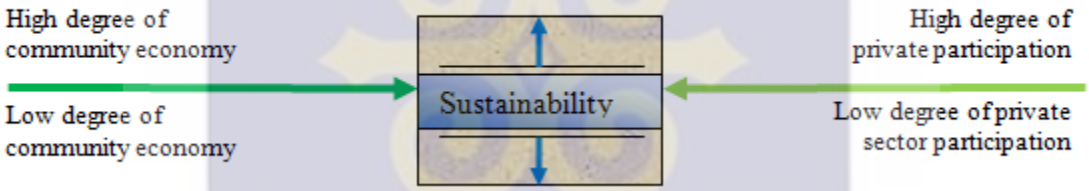

Figure 7.1: Relationship between private sector participation and sustainability of peri-urban community water system, Adapted from Koelster (2009)

The figure 7.1 illustrates that where there is high degree of community economy and private sector participation leads to more efficiency and sustainable water service delivery than where there is low degree of community economy and private sector participation.

7.3 Policy Implication for Peri-urban Community-Based Water Management

Analysis of policy and legal documents indicates clearly that the legal framework in Ghana for water service delivery system should adopt a participatory approach whereby

all stakeholders and service users be involved. Furthermore, Ghana National Water Policy is underpinned by the principles enunciated in the Growth Poverty Reduction Strategy (GPRS I and II), the MDGs, and the "Africa Water Vision" and of the New Partnership for Africa's Development (NEPAD). The framework also gives local community as service users mandate in operation and maintenance for day to day operation and rights of ownership of the water supply system.

The GPRS I and II both highlight facilitate economic growth and sustained poverty reduction. The NAWAPO states that Strategies for providing safe water will focus on increasing access to rural and un-served peri-urban and poor urban areas (NAWAPO, 2007). However, the margin of water tariffs between CWSA-facilitated community water and GWCL is too huge. The question here is this: "why the poor in rural and peri-urban dwellers 'community' should pay more than rich urban dwellers?" [50]. It is in this context that the water policy contradicts with the Growth and poverty Reduction Strategies and the government commitment in achieving the MDGs. It should be noted that the component of water is almost incorporated in all MDG principles.

Furthermore, the cost recovery of the community-managed water supply system through PAYF is not realistic for rural dwellers who depend on seasonal income. Water is life; (PAYF) is paid in every moment you fetch. In the study area, respondents revealed that sometimes 'you find that you do not have even 05Gp in your pocket and you need water'. So far, the water vendors are not allowed to sell it on credit. Alternatively, people resort to using unimproved water. This also undermines the coverage rate data of people using

[50] The idea came after computing the differences of water tariffs between AOT and GWCL, where by AOT pay GH₵ 2.75, while GWCL pay less than GH₵ 1per ($1M^3$)

improved water as presented in MDGs Ghana report (2010). There is still lack of adequate mechanism to effectively target the poor at the system level.

The water policy stipulates that water resources qualify as a common resource given that it is accessible to the whole community or collectively owned or managed by identifiable community, to which no individual has exclusive property right. In the community-managed water supply system a traditional water property right has been transferred from individual community to (WSMT). The traditional water property right allowed individual community to access water for free. Thus, as argued by Akpabio (2010) community water is assumed to be managed between socio-economic spaces. It is managed as common social property in the sense that every person has access to it and it is economic as its supply is limited.

The NAWAPO in section 2.2.2 (i) stipulates that it is a "fundamental right of all people without discrimination to safe and adequate water to meet basic human needs". It contradicts with the statement of Mar del Plata conference 1977 and 1992 Earth Summit that addressed "basic needs" (UN, 1977): all peoples, whatever their stage of development and their social and economic conditions, have the right to have access to drinking water in quantities and of a quality equal to their basic needs. However, in some circumstances such communities have the right to access unimproved sources of water for free at their own risk. The study revealed that the community does not have such attitude of seeing water as 'a gift from nature' which implies free access and use of water to every member of the community irrespective of class or socio-economic status. It is now about three decades since improved water supply was commoditized or individualized into market space.

The decentralization policy articulates a transfer of public amenities ownership from the state to the local level (grassroots). For example, community-managed water facilities management has transferred responsibility from the state to local WSMT (decentralization). Interestingly, at the same time management rights have shifted from local communities to central WSMT (centralization). Thus, it is in this context that you find the legal framework destroys what it supports. NCWSP was designed in 1993 to increase water supply coverage in rural areas by 83 % (at first) by the year 2008 (later: by 85 % by the year 2009 and by 100 percent by the year 2020). Since 1999 the programme has also taken on the responsibility for supply in small urban areas. It is interesting how the target can only be met by donor dependency strategy by more than 95% financing for community water supply. In line with this, no budget has been allocated for monitoring and evaluation for community water systems. The impression being created is that nothing can be done about an important utility such as water, without the support of the donor agencies.

7.4 Conclusion

The conclusion to be drawn is that the participation of water sector institutions in the peri-urban community-managed water system is generally effective for sustainability of the water supply system. However, more efforts are needed to strengthen DA to support the community-managed water supply system and to respond to all request made by WSMT on time. Furthermore, the relationship between the DA and CWSA should be strengthened so as to increase efficiency and effectiveness of both agencies. In addition, collaboration and cooperation between private water sector, NGOs, CWSA, and DA should be emphasized. Government spending on water sector is very minimal, since

2000s budget allocated for the sector is below 2% while the population growth is about 3%. So, the government should create enabling environments for private sector participation and strengthen public private partnerships. Lastly, cordial relationships between the WSMT, DWST and WATSAN should not be neglected at all.

CHAPTER EIGHT: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

8.1 Introduction

This final chapter presents the summary of findings and discusses the recommendations and conclusions from the analysis and findings of the study. The general objective of this study is to examine and determine how local community participation and water institutions affect the sustainability of peri-urban community-managed water supply systems in GAR. The chapter includes six (6) sections: summary of findings and conclusions, policy recommendations, the study's contribution to knowledge and implication for further research. The conclusions are subject to the three research objectives: i) examining local meanings of 'participation' under different socio-cultural perspective and stakeholders' views of the concept of 'participation', ii) determining the scope of local community participation in community-managed water supply system, drives for community's participation and its sustainability and iii) examining the role of water institutions and the sustainability of community-managed water supply system.

8.2 Summary of Findings

This section summarizes the findings based on the three research objectives as explained below.

1. *To examine local meanings of participation under different socio-cultural perspectives and stakeholders views of the concept of 'participation' in relation to Peri-urban community-based water management.*

Quantitative findings have shown that the local meanings of participation are viewed differently among community members. Thus, there are more diverse interpretations and perceptions of the concept of 'participation' than normally assumed. Local community perceive the concept of participation in water provision and management as secondary to public responsibility for the following reasons: water is a public amenity, government should finance all costs and donors or NGOs that implement water supply project should finance all cost as well. By using SEM analysis, all these factors were shown significant, except for a gender variable: 'women should participate more than men.' The study found that this was insignificant. Local community define 'participation' in relation to water as: community involvement in decision-making, community representation, attending in community public meetings, participating in community water activities, contributing manpower, in kind but not monetary and women participation. All these factors have shown positive correlation and significance.

It has also been shown that out of 8 variables established to test factors that influence such local community's perception, all have positive association except 4 variables: political party affiliation, economic status, trust and availability of other projects funded by NGOs which are not significant. The rest have shown significance: local beliefs, level of education, social status and social networks.

In terms of qualitative findings, it has shown the variation in perceiving and understanding the concept of 'participation' in relation to water issues between local community and stakeholders. The stakeholders perceive and understand participation as 'instrumental' to achieving development goals, 'transformative to show they are doing something for them as 'being independent of the community hence sustainability and as

'being shareholders' or partners in ownership. Local communities understand participation as involvement and non-monetary contribution, involvement in decision-making, community representation and attending public community meetings. The variations of the perceptual concept of 'participation' between local communities, state and stakeholders is based on 'cost-sharing'.

The findings on this objective suggest that local perception and stakeholders' views of the concept 'participation' and sustainability of community-managed water supply system is more complex than what it is known or assumed to be. It covers wide varieties of actions that can influence the perception of participation and sustainability. Its basis, conception, forms and levels are influenced by such additional external physical and natural factors like geographies, globalization and economic activities. Rural-peri-urban and peri-urban continuum, experience from area of origin, necessity of the service and socio-economic and political changes. These leading factors influence local perception and stakeholders' views of the concept of participation and sustainability of the project.

2. *To determine the scope of peri-urban community participation in water management, drivers for participation and sustainability of the system*

The finding showed that the local community participation through decision-making varies at different stages of the project cycle. Project plans and decisions were made by the implementing agencies (donor and CWSA), then, the communities were consulted after the project design. During the Pre-construction stage, communities were consulted about the project and the feasibility study. In addition, the study showed that communities are more involved in decision-making for operation and maintenance. It has

also been indicated that peri-urban, local community participation in community public meetings was higher during the mobilization stage than the post construction stage.

In terms of the determinants for local community participation in peri-urban community-managed water supply system, many variables have shown to have a positive correlation and are significant for participation in water management: number of years that a household lived, indigenous status, household size, trust, demand for services and political party affiliation except the education, local beliefs and social status had negative correlation but are significant. Age, gender, income and social networks variables had positive relationship but not significant. However, in data analysis, there was a variation of findings for religion, whereby the logistic regression results showed that the variable had negative correlation and it is not significant, while through content analysis, religion had effect on local community participation. In the study area, at the time of implementation of the system, the Presbyterian Church dominated the area where the congregations follow one of the Presbyterian principles of working together and helping one another.

The findings indicated that there was a clear relationship between local community participation and sustainability of peri-urban community-managed water system. Local community participation increases community awareness and spirit of ownership. The idea of 'sense of ownership' is the major factor for the sustainability of the project. The sense of ownership has increased the community's sense of security, hence reduced illegal water connection. In peri-urban community-managed water supply, the area mechanics are easily reached by the community for the breakdown times as compared to the Ghana water company system. The communities seemed to be satisfied with their

participation in relation to the services rendered. For the past 9 years, the AOT system still provides water to customers to match the CWSA basic service standards. The AOT system has been able to cover all costs for operation and maintenance. It has many household piped subscribers whereby their water utilization is almost double more than those households depend on public water points. However, it questions the sustainability of the system in the near future because the investment or depreciation/replacement accounts have not been able to generate or accumulate enough funds required for the installation of new system.

The active participation of local community in the whole process of project cycle invariably leads to access and sharing information, understand project problems and its challenges enhances sustainability. In addition, local community contribution for capital cost has no direct relationship to local community's commitment for water service demand and sustainability of water facilities. Moreover, there is still no agreement as to what extent local community participation has impacted on the sustainability of peri-urban community-based management facilities. This is because there is no consensus on the analytical techniques to use for community participation and sustainability assessment.

The findings of this objective conclude that: the assumptions that local communities through participation are capable of financing all operation, maintenance, rehabilitation costs and expansion for new water system supply is relatively not justifiable, especially for the expansion of new water systems. Furthermore, the space for local communities' participation is also limited because it is bounded by time and allocation of funds, planned by funding agencies.

3. *To examine the role of water institutions and the sustainability of peri-urban community-managed water supply system*

The findings have shown that the WSMT and WATSANs in the AOT peri-urban community-managed water supply are not really effective in handling the system issues. However, the performance of water system does not necessarily translate into having effective WSMT and WATSANs, but rather effective leadership offered by the system manager is a key driver of the project performance. The research found that, the AOT recorded good performance in terms of accounts auditing and service delivery but there is no cordial relationship between WSMT and employed staff.

It has also been shown that there are no cordial relationships between WSMT and DA. The findings also show that DA does not play its roles and responsibilities to support the AOT community-managed water supply. It revealed that, DA is facing financial crisis but even non-financial support is very minimal. For example, it has been more than 5 years since the project was audited. . Furthermore, it has shown that DA does not have a specific personnel or office dealing with water supplies; rather it has a DWST formed from different departments.

Furthermore, for the case of the sustainability of the water supply system, the researcher concludes that the service delivery level at the field study falls under service category III that "the piped scheme provides service as per design standards for population category but does not meet at least one of the sub-indicators". At a more general level, however, dependence and support from donor-funding should remain as a catalyst for community water interventions. More long-term finance from the multilateral development agencies is still needed though with regulated conditionality to government, and better public-

spending decisions that reflect community priorities, including investment in water and sanitation.

8.3 Policy Recommendations

Participation is, thus, a contested concept, and such contest has been assigned different meanings by different communities and different stakeholders who have the potential to challenge patterns of dominance and experts of participation. What has not been acknowledged in policy and practice is the complex mix of social, economic, cultural and political realities which are being influenced by the global world. Therefore, the concept that 'one size fits all' should not be emphasized without enough data to inform the characteristics of the entire community.

The lifespan of AOT-CWSA facilitated system is 10 years and thus after that there should be a replacement with new system. Experiences and the financial capacity of AOT system and other community water management indicate that there is no CWSA-facilitated system which has been replaced with a new system. The DA is weak in mobilizing funds hence the dependency from central government has aggravated the problem because such transfer are not made in time. The study recommends that the Abokobi DA should introduce a Water Basket Fund and look for other sources of fund to support the peri-urban community-managed water supply especially for replacement of new system.

Based on the findings, the AOT water supply system depends only on resources raised within the community through PAYF and MBP for private subscribers to finance operation, maintenance and rehabilitation cost. It was revealed that the project was able

to cover the operation and maintenance cost because much money was collected from private household subscribers. There was an indication for stand-pipe users could soon be neglected as the money collected from them is low. The research recommends that there should be a balance of water service delivery between both of them.

Periodic and timely water supply system maintenance and rehabilitation needs serious consideration to identify potential technical problems and ensure that action is taken to rectify them before they become deep-rooted and chronic. Although, the operation manual requires or demands that the water system be checked regularly, whether it is broken or not, evidence shows that maintenance was only done when the water supply system broke down.

There are serious agitations on the part of O&M staff for the adjustment of salaries and allowances which do not change with the actual inflationary country currency, tariffs adjustments and review. Although, there is no guiding principle or framework for salary and allowances adjustment, the staff expected that, their salaries and allowances could have been adjusted whenever tariffs are reviewed. For example, since 2008 to 2013, tariffs have been reviewed 3 times but the salaries and allowances have been adjusted only once between 2008 and 2013. The researcher recommends that the DA should collaborate with WSMT to formulate guiding principles and framework for O & M staff. It should be noted that tariffs review does not necessarily imply salaries and allowances adjustment, however, motivation and allowances should be encouraged as budget allows.

Over reliance on voluntarism is an aspect that must be looked at again. Being a WATSAN or WSMT member is purely voluntary work. It was evidenced that, when the election of new WATSANs and WSMT members come, people do not appear to contest

for the position. It happened one time the DA had to postpone the election twice as there were no candidates. It was also revealed that some WATSANs and WSMT members resigned their position even before the end of their term. It is recommended that the CWSA and DA should consider new approaches and arrangements to motivate and pay the voluntary workers. Irregular and ineffective monitoring mechanism by DA can lead to poor performance in operations. The researcher also recommends that at the district level there should be specific person and office dealing with water issues rather than DWST presently in place.

NCWSP policy treats rural and small town's (peri-urban) as a single unit. Empirically, this is not the case. NCWSP should put a clear legal framework at a time where rural areas are transforming into peri-urban and when peri-urban areas are transforming into urban. Also the policy should recognize that, peri-urban areas settings are not the same as rural settings especially life environment, technical complexities between pumps and piped water system and institutional arrangements, different management challenges and different socio-economic characteristics, especially in terms of economic status, economic activities and affordability to pay, social status, population growth, and demand for service.

The CWSA policy stipulates that CWSA-facilitated community water supply system to be managed by WATSANs on voluntary basis. The CWSA policy does not specify which level of education is required to be eligible for WATSAN post. The researcher recommends it is in this context of global village, that at least minimum qualification should be candidates who possess the ability to read and write.

Ghana has since the mid 1990's been implementing reforms in the water sector aimed at enhancing the efficiency and effectiveness of the production and utilization of water. Despite the deliberate efforts to implement these reforms, a major concern has been the lack of funding and policy translation. The current Ghana water policy has separated two utilities mandated to serve the urban and rural and small town's water supply, whereby CWSA and GWCL serve rural and small towns and urban dwellers respectively. Conceptual and institutional differences, which occur with the introduction of a piped system to a peri-urban setting, are ignored at policy level, where the change from a rural to a small town management system is argued simplistically in terms of technical and institutional upgrading.

The research has contributed towards an enhanced understanding of the variations in the perception of the concept 'participation' between local communities, government officials and stakeholders. Understanding these differences will enhance policy makers to attenuate factors that weaken the significance of the policy. The overall goal of the research was to contribute to the improvements in continuity and sustainability of community-managed water facilities in peri-urban Greater Accra. The researcher believes that this study is timely and the insights provided will influence and inform the current and future generation policy development as peri-urban areas are confronted with many development challenges. Overall, the data suggests that there are no single important forces that undermine individual's involvement into local community activities. Rather, they are multilevel human factors such as demand for service, permanent residence, local beliefs, political affiliation, social status, trust, family size, ethnicity and education.

8.4 Implications for Further Research

The research has revealed a number of challenges confronting the peri-urban community-managed water supply system and this suggests further studies by future researchers. The study was mainly specific, looking at the impact of local community participation and water sector institutions on sustainable community water facilities in peri-urban areas. The study found that, with the fact that water is the most basic need for human life; local participation in community-managed water supply is not the same as participating in other community social services like education and health. Therefore, there is a need for further research on levels of local participation and sustainability of other social services where individuals have greater option, alternative and substitute for the service.

Since the AOT water supply system was planned to last for 10 years from the first date of installation, replacement for a new water supply system will be needed. This does not mean that after 10 years the system can be totally broken but its efficiency becomes low. The researcher strongly recommend future research to assess the capacity of a community-managed model to replace the new system as assumed by the government that after inception, all costs and replacement for a new system will be incurred by the community. This will help future planners and policy makers to determine the authenticity of the community management model.

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LIST OF APPENDICES

Appendix 1: Introduction Letter

INSTITUTE OF STATISTICAL, SOCIAL AND ECONOMIC RESEARCH
UNIVERSITY OF GHANA
E.N. OMABOE BUILDING COMPLEX
P.O.BOX LG 74, LEGON, ACCRA,GHANA
TEL: +233-302-501182/512502 FAX: +233-302-512505/500937
WEBSITE: www.isser.edu.gh E-MAIL:isser@ug.edu.gh / info@isser.edu.gh

OUR REF ..... DATE .....
5th August, 2013

TO

Dear Sir/Madam

LETTER OF INTRODUCTION

The bearer of this note, Stephen J. Kilasi is a Ph.D student in this Institute of Statistical, Social & Economic Research (ISSER), University of Ghana, Legon. Mr. Kilasi Stephen is undertaking a Ph.D field work with his topic on: ***"Local Participation in Sustainable Community Water Management in Peri-Urban Areas of Ghana".***

I will be grateful if you could give Mr. Kilasi, Stephen the required assistance and support in carrying out his study. The end product of this in-depth interview will aid completion writing a Ph.D Thesis, researchers, policy-makers, as well as provide opportunities to improve community water supply systems in peri-urban areas of Ghana.

All information and materials collected will be used solely for the intended academic purposes only. If any further information is required concerning this matter, please contact Mrs. Christy O. Badu as follows: 0289556879; Email:cobadu@ug.edu.gh.

We are very much counting on your co-operation

Sincerely,

Rev. Dr. Adobea Owusu
PhD Programme Coordinator

Appendix 2: Informed Consent Form

Institute of Statistical Social and Economic Research

INFORMED CONSENT TO PARTICIPANTS

Date.....

Dear participant,

You are invited to participate in a study "**Local Participation and Sustainable Community Water Management in Peri-Urban Areas of Greater Accra Metropolitan Area, Ghana"**. Your participation will be administered by me (Stephen J. Kilasi), a PhD candidate at ISSER, University of Ghana, Legon. In some instances, the interview will be guided by identified research assistants. I would like you to participate in this interview. I expect that this interview will take a maximum of 40Min to complete. It is allowed to interrupt at any time during the interview.

I would like to inform you that your participation is voluntary and anonymous. If you would like to discuss any aspect of the research and/or you contribution to it after completing the interview or later please contact me through, kilasi2000@yahoo.com or through mobile No: 0261736431, +255 754 377639.

Thank you for participating in this study; your inputs are critical for the success of this interview.

Name (Optional).....
Organization.....
Position.....
Date.....
Signature.....

Appendix 3: Research Questionnaire

Institute of Statistical Social and Economic Research

Date ☐☐ ☐☐ ☐☐ **Responded ID** ---------- **Interviewer Name**----------

UNIVERSITY OF GHANA

INSTITUTE OF STATISTICAL, SOCIAL AND ECONOMIC RESEARCH (ISSER)

PhD IN DEVELOPMENT STUDIES

TITLE: Local Participation and Sustainable Community Water Management in Peri-Urban Areas of Greater Accra Metropolitan Area, Ghana

INSTRUMENT FOR HOUSEHOLD QUESTIONNAIRE

NAME: STEPHEN J. KILASI

Questionnaire on examining and determining local participation and water institutions in sustainable community water management

I am a Ph.D candidate from the Institute for Statistical, Social and Economic Research at the University of Ghana in Legon. The study aims at increasing our understanding of the impact of local participation and the role of water institutions in sustainable community water management. Approximately 250 selected households across the 2 communities of the Greater Accra Region will be interviewed. Your participation in this research study is completely voluntary; however, I will really appreciate you by accepting to be interviewed. The interview will take about 30 minutes, and will cover topics such personal characteristics/information, local perception, level and forms of participation and sustainability of community water facility. If you do not want to answer any interviewed question, you are welcome to skip it.

Please note that this questionnaire is for academic purposes only and is not intended for any other usage. For ethical and confidential reasons I will not write your name on your interview form. The information you provide may help to improve existing community water programs and for future ones for sustainable community projects.

Please, if you have any questions, complaints or concerns about this research, feel free to ask me or to contact me through: kilasi2000@gmail.com, mobile No 026 173 6431 or my research assistants.

A. Background Information

1. Please, provide your information as it is indicated in the tables, fill your age, and tick the correspondence answer for marital and gender status

Age	Marital Status			Gender		Religion	
	1	Single		Male		Christian	
	2	Married		Female		Muslim	
	3	Separated				Traditiona	
	4	Divorced				None	
	5	Widowed				Other	
	6	0ther					

2. Where were you born?

A	In this community	
B	Another place within the district	
C	Another place within the region (different district)	
D	Outside this region, where...	

3. If you were not born in this community, Where did you move from, by community type

By community type			No of years you have lived in this	
1	Always lived in this community		1-5 yrs	
2	Rural Village (less than 5000 pop		6-10	
3	Town (5001-10,000)		11-15	
4	Small City (10,001-30,000)		16-20	
5	Medium City (30,001-100,000)		21-25	
6	Large City (more than 100,000)		26+	

4. Please, in the table below indicate or provide information:

Highest level of education			Ethnicity	
1	Primary		Akan	
2	Junior Secondary/Middle school		Mole-Dagbon	
3	Senior High/Secondary School		Ewe	
4	Vocational/Technical		Ga-Dangme	
5	Tertiary Non formal		Gurma	
6	University		Guan	
7	Non formal		Grusi	
			Mande-Busanga	
			Other, specify	

5. Do you live in your own house?

1	YES		2	NO	

6. Which of these best describes where you live?

1	Single family housing (detached)		4	Uncompleted building	

2	Single family housing attached to other housing units (flats/semi-		5	Building for more than three families (compound housing)	
3	Kiosk/Container		6	Other	

7. What employment category do you fall into?

1	Government		4	Self-employed (formal)	
2	Non-Government (formal)		5	Self-employed (informal)	
3	Retired		6	Unemployed	
7	Other, specify…				

8. What is your main occupation?

1	Farmer (Crop)		4	Trader		7	Casual worker	
2	Farmer (Horticulture)		5	labourer		8	Artisan	
3	Livestock breed		6	professional		9	Other (specify)	

9. What is your average monthly household income in New Ghana Cedis (GH¢)?

Sources of income	**Monthly**	**Annual**
Wages and salaries (formal employment)		
Remittances received		
Income from businesses of household members		
Sales from agriculture products		
House or Land rented out		

10. What is your household size

No of children (between 0-18)	No of children (above 18)	No of Individual (s) living with you

B. Sources of Water

11. Which of the following is the main source of water in your community? (Please indicate on a scale of 1 –main source,.....less and 4- least source)

N0	Main source of water	-1-	-2-	-3-	-4-
1	Piped system				
2	Borehole (pump)				
3	Hand-dug				
4	Rainwater harvest/reservoir				
5	Dam/River/Pond/Canal				
6	Kiosk/private vendor				
	Other, specify……..				

12. Which of these is community-managed and operated? (*tick*)

1	Borehole (Pipe system)		2	Borehole (Pump)		3	Hand-dug well	

4	Natural water body			

C. Local Meanings of Participation and Social Capital in Relation To Water

i. Local Meanings of Participation

13. In your community, when someone talks of people's participation in water services, what does it mean? (Please indicate on a scale of 1 –strongly agree,.....less and 4- strongly disagree)

Factor	Strongly agree	Agree	Neither Agree nor Disagree	Disagree	Strongly disagree
	-1-	-2-	-3-	-4-	-5-
Involvement of community in decision-making					
Community representative					
Attending in community meetings					
Participating in community water activities					
Contributing money					
Contributing manpower (labor) or in kind					
women participation					
Other, specify					

14. How is the concept of "participation" in 'community water' perceived in your community?

Perception	Strongly agree	Agree	Neither Agree nor Disagree	Disagree	Strongly disagree
	-1-	-2-	-3-	-4-	-5-
Water is a public entity; should be freely provided					
Government should finance all cost					
Donors, government and NGOs should finance all cost					
Women should participate more than men					
Other, specify					

15. What are the factors which influence such perception in (question 13)

Factor	Strongly agree	Agree	Neither Agree nor Disagree	Disagree	Strongly disagree
	-1-	-2-	-3-	-4-	-5-
Local beliefs					

Level of education					
Political status or party affiliation					
Social status					
Economic status					
Social networks					
Trust					
Availability of other projects funded by NGOs					
Other, specify					

16. (a) Do you think that what you perceive as participation is the same as government institutions?. 1=YES, 2=NO, 3=don't know
17. Why do you think so? .....

		Quite a lot	A lot	Not much	Never	Don't Know
		-1-	-2-	-3-	-4-	-5-
1	People in your own tribe					
2	Other tribes in the same community					
3	Politicians					
4	People in the same religion					
5	Government service providers					
6	Chief					

18. How much do you trust the following people?

(b). Generally speaking, would you say that most people in this community can be trusted or that you need to be very careful in dealing with people?"

1	Most people can be trusted	
2	Need to be very careful	
3	Don't know	

ii. Equity

19. Based on your experience, please, indicate whether you agree or disagree with the following statements:

	Statement	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
		-1-	-2-	-3-	-4-	-5-
1	WATSAN has a policy to assist disadvantaged and old people					
2	People are always interested only in their own welfare					

3	Members in this community always help the disadvantaged and old people					
4	Disadvantaged and old people pay less user fee than others					
5	People of families that are not able to pay user fee, they pay in kind					
6	People or families that are unable to pay for water user fee are always exempted					
7	Community or families that are unable to pay are always assisted with their relatives					

C. Scope of Participation in community water management

This section is about your scope and level of participation in the community water facility.

i Participation in planning process

20. In which ways were you involved or represented in the planning process of the community water facility?
    a) ……
    b) ……..

21. In planning process, were the following considered as the important factors for community water sustainability?

Factor	Strongly agree	Agree	Neither Agree nor	Disagree	Strongly disagree
	-1-	-2-	-3-	-4-	-5-
Demand of the service					
Willingness to pay					
Ability to pay					
Equality and equity					
Desired technology					
Location of the facility					

22. In which ways were local community members involved or represented in the planning process?

	Community involvement/represented	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
		-1-	-2-	-3-	-4-	-5-
1	Through public meeting					
2	Through Faith Based Organizations					
3	Through representative (s)					
4	Through local community groups					
5	Other, specify.....					

23. What type/kind of consultation or participation was dominant in your area?

Type of consultation	Strongly Agree	Agree	Neither Agree nor	Disagree	Strongly Disagree
	-1-	-2-	-3-	-4-	-5-
Opinion surveys					

Written letters					
Public hearings/meetings					
Telephone solicitations					
Local activism					
Other, specify……					

24. Describe ways in which local community is involved in operation and maintenance of community-managed water supply system?
    i……
    ii. ……
    iii. ……
25. As distinct groups, in which ways do men, women and youth play any special role in the planning and implementation of community water project?
    Men……
    Women……
    Youth……..

26. How were the project/facility assessed or selected?
    ……
27. Which of the following decisions do someone or you in your household participated in its planning stage?

N0	Participation in decision-making before the project	Actively participate	Partial Participate	Never participate	Don't know
		-1-	-2-	-3-	-4-
1	Deciding on or electing who manages the facility				
2	Determining the hours and days for facility to operate				
3	Setting water tariff provided by the facility				
4	Identifying possible site for facility				
5	Choosing the desirable technology				
6	Deciding the nature of contribution				
7	Other, specify…….				

28. Were you participated in community water management?

S/N		YES	NO
1	Voting for community water project leaders		
2	Standing as a candidate		

29. What is the degree of participation in the following issues of community-managed water supply?

Factor	Very high	High	Neither high nor low	Very low	Low

	-1-	-2-	-3-	-4-	-5-
Identifying the need of facility					
Planning and decision-making					
Implementation and monitoring					
Operation & maintenance					
Other, specify……					

30. Do you think your participation in community water can be the same as to other community development projects?

1	YES		2	NO		3	Don't know	

31. Who do you think is the most influential over the decisions made before the implementation was undertaken?

N0	Most influence over decision made before implementation	Strongly agree	Agree	Neither Agree nor	Disagree	Strongly.
		-1-	-2-	-3-	-4-	-5-
1	Government agency (CWSA)					
2	District Assembly					
3	WATSAN					
4	The community					
5	DWST					
6	Private drilling contractor					
7	Community leaders (chiefs)					
8	Donor					
9	Other,specify……					

ii Participation in meetings

32. In which ways does local community meet to discuss water issues and how to resolve them? ……

33. Who organize the local community meeting to discuss challenges, progress and opportunities? ……

34. How often are these meeting scheduled? (Then, probe (numbers)……

35. Are the meetings held as they are scheduled in the annual calendar or work plan? .....

1	YES		2	Not really		3	No		4	Don't know	

36. How much do people in this community participate in public meetings?

1	Quite A lot		**2**	A lot		**3**	Not very much	
4	Never		**5**	Don't know		**6**	Other, specify ……	

37. How often do you attend and participate in local community meetings? (Then, probe (numbers) ……

38. In which ways has a member of this household participated in official public meeting over the last 12 month?

……

39. What is the ratio of gender, workers (formal sector) and age attendance in the general community meeting? ***Please, tick the answer in each section***

GENDER	More women	1	
	More men	2	
	Equally men and women	3	
	Do not know	4	
AGE	More young people	1	
	More adults	2	
	Equally young people and adults	3	
	Do not know	4	
EMPLOY MENT	More formal workers (formal sector)	1	
	More employed workers (informal sector)	2	
	Equally (informal and formal workers)	3	
	Do not know	4	

40. Describe, in which ways your attendance and participation in community meeting has any impact on community water facility?

……
……..

41. In what ways do you think all groups have equal chances of getting heard at community meeting?

……

42. In which ways do the following groups dominate the discussion in public meetings?

Group		Highly dominate	Not really	Never	Don't know
1	Women				
2	Men				
3	Elders				
4	Youth				
5	Other,				

iii Participation in Decision-Making

43. In decision-making at the community level which of the following is the most important consideration?

The most important in consideration	Strongly agree	Agree	Neither Agree nor Disagree	Disagree	Strongly disagree
	-1-	-2-	-3-	-4-	-5-
Gender balance					
Communal balance					
Political party affiliation					
Ethnicity					
Equality and equity					
Representation of community groups					
Other, specify					

44. In what ways are individual interests incorporated into the community action and/or final decision?

……
……

45. Which of the following position do you consider have influence in terms of decision-making in the community

Position	Strongly agree	Agree	Neither Agree nor	Disagree	Strongly disagree
	-1-	-2-	-3-	-4-	-5-
Assembly person					
Traditional chiefs					
Member of parliament					
Unit council member					
WATSAN					
Other, specify……					

iv Participation-Factors that Influence Local Participation

46. Are there any sector based projects listed in the table below, which have used a community participatory approach in your area for the past 5 years? Who initiated the project?

Sectoral project		Who initiated (select the answer from group A)		**Group A**
Education			1	NGOs
Health			2	Government
Sports			3	CBOs
Sanitation			4	Partnership
Infrastructures (constructions)			5	Other, specify…..

47. Which one among the above mentioned projects is sustainable?
……

48. Which of the following do you consider as the most important factor that influence people's participation in community water processes in your locality (please, rank in…..)

Relationships	Yes	No	Don't know
Local beliefs			
Social status			
Social networks			
Trust			
Demand of the service			

49. Which political party do you belong? (Tick one)

Ruling political party	
Opposition political parties	
None of the above	

v Relationship Between Participation and Sustainability of Water Facility

50. Describe, to what extent does community contribution of 5% of capital cost as a commitment fee has impact on harmonizing local participation and sustainability of the project? ……

51. Which are the best modes of payments for community water user fee?

1	Monthly contribution		3	Pay for maintenance	
2	Pay as you fetch		4	Other, specify	

52. In which ways do you think there is relationship between local participation and sustainability of community-managed water supply system? (Probe how is the relationship are like).
……
……

53. What do you think should be done to improve local participation in community-managed water supply system?
……
……

54. How did you feel your participation in community-managed water project is rewarding?

……

……

55. What are your impressions of local participation in your area?

---

vi Community Water Management

56. Have you participated in community water management through (contesting and voting for election and contributed for project capital cost@

YES		**NO**		**Don't know**	

57. What are the main sources of information about progress, process and decision-making in this community?

……

58. What problems do you encounter in your efforts to acquire information about the water project?

1	WATSAN often thwart efforts	
2	Unit council do not try to inform us	
3	Do not know who to contact for information	
4	No problems	
5	Other, specify	

59. In which ways do you think WATSAN is an effective institution for managing community water project at local level?

……

60. Does the community have a strong organizational system to effectively meet the challenges involved in sustaining water supply?

Organizational system to meet sustainable challenges	Very strong	Strong	Neither strong nor Weak	Weak	Very weak
	- 1 -	- 2 -	- 3 -	- 4 -	-5 -
Financial capacity (revenue collection)					
Transparency and accountability					
Leadership					
Trust					
Technical capacity					

61. (a) Describe, in which ways does the community meet to discuss development problems?

……

(b). When WATSAN is presented with crucial problems of water issues, what do you think is the usual outcome?

		20%	40%	60%	80%	100%	0ther
1	Successfully resolved						
2	Not always successfully resolved						
3	Staff often thwart efforts						
4	Always lukewarm						
5	Unsuccessfully resolved						
6	Other, specify…..						

62. When District Assembly is presented with crucial problems of water issues, what do you think is the usual outcome?

		20%	40%	60%	80%	100%	0ther
1	Successfully resolved						
2	Not always successfully resolved						
3	Staff often thwart efforts						
4	Always lukewarm						
5	Unsuccessfully resolved						
6	Other, specify…..						

63. When Water and Sanitation Board are presented with crucial problems of water issues, what do you think is the usual outcome?

		20%	40%	60%	80%	100%	0ther
1	Successfully resolved						
2	Not always successfully resolved						
3	Staff often thwart efforts						
4	Always lukewarm						
5	Unsuccessfully resolved						
6	Other, specify…..						

(b).when WATSAN are presented with crucial problems of water issues, what do you think is the usual outcome?

		20%	40%	60%	80%	100%	0ther
1	Successfully resolved						
2	Not always successfully resolved						
3	Staff often thwart efforts						
4	Always lukewarm						
5	Unsuccessfully resolved						
6	Other, specify…..						

64. How would you describe the relationship between the followings as indicated in the table below?

Relationships	Very cordial	Cordial	Not cordial	Very antagonistic	Don't know
	-1-	-2-	-3-	-4-	-5-
WATSAN and community					
Among communities					
Between WATSAN themselves					
WATSAN and Gvt officials					
WATSAN and traditional chief					
Assembly person and community					
Assembly person and WATSAN					
Other, specify					

65. How would you assess the WATSAN management of community water facility as shown in the table below?

Community water management	Strongly agree	Agree	Neither Agree nor	Disagree	Strongly disagree
	-1-	-2-	-3-	-4-	-5-
The extent that the management is active to ensures sustainability of community water					
The extent that you are satisfied with the management team of community water facility					
The extent that the management team involves local community in decision-making					
The extent that the management is timely on resolving water issues problems					
The extent that the management values individual interest					
The extent that the management values community interests					
The extent that the management is able to supervise contractors					

66. In which ways does gender play a role in community water facility management?

……

67. How would you assess WATSAN in terms of the followings leadership qualities?

Leadership qualities		Excellent	Good	Neither Good nor poor	Poor	Very poor
		-1-	-2-	-3-	-4-	-5-
1	Integrity					

2	Transparency					
3	Cooperation					
4	Tolerance					
5	Trust					
6	Accountability					
7	Sacrifice/ risk taking					
8	Visionary					
9	Corruption					
10	Other, specify.....					

vii. Sustainability of Community-Managed Water Facility

a) Functionality

68. Please, the following questions are about the functionality of water facility, comment on the following statements.

	Statements	Excellent	Good	Neither Good nor poor	Poor	Very
1	Generally, from your observation how can you rate the construction quality of the water facility?					
2	Overall, from your observation how will you rate the sustainability of the water facility?					
3	What is your general impression of the functioning of the facility?					

69. Describe, in which ways does functionality of water facility meet your water need?
.....

70. How do donor agencies, local government and other organizations have been back to support the community project since the facility was installed?
    a) Donor agencies
    ……
    b) Local government
    ……
    c) Other organizations
    ……

71. Who normally fetches water for this household?

N0	Who fetches water	Strongly agree	Agree	Neither Agree nor Disagree	Disagreed	Strongly disagree
		-1-	-2-	-3-	-4-	
1	Father					
2	Mother					
3	Children					
4	Other, specify……..					

72. Please, respond to the following statements

Questions		Answer
1	How many times has the facility broken down in the past 12 months? *(probe numerical No)*	
2	What was the usual cause of breakdown?	
3	How long does it take to fix or repair? *(Probe a*	
4	How regular is water quality tested? *(probe a numerical*	
5	How many times has water quality been tested in the past 12 months? *(probe a numerical No)*	
6	Have you ever informed about water quality when tested? *(YES or NO)*	
7	Are there any variations in water supply between dry and rainfall seasons? *(YES or NO)*	
8	Specify, which month (s) water does not flow due to dry season	
9	How many days in the past three months you did not have access to water?. *(Probe a numerical No)*	

b) Factors for Sustainability

73. In what ways are the following important factors for sustainability of community-managed water facility?

Factor for sustainability		Very impor tant	Impor tant	Not really	Not impor tant	Don't know
1	Committed project leaders (WATSAN)					
2	Committed funding agencies and donors					
3	Committed government support					
4	Community commitment					
5	Local government commitment					
6	Traditional leaders, chiefs					
7	Desirable technology and availability of spare					
8	Other, specify					

74. In which ways are the following factors considered as threats for sustainability of community-managed water supply systems

Factors		Strongl y agree	Agree	Neither Agree nor Disagree	Disagre ed	Strongly disagree
1	Lack of financing for O&M					
2	Sectional conflict					
3	Politics in facility management					
4	Lack of Local government commitment					
5	Dominance of traditional leaders, e.g chiefs					
5	Lack of community commitment					
6	Lack of transparency					
7	Community opt on expensive alternative services providers					
8	Indifferences among WATSANs members					

9	Poor flow of information					
10	Poor project management and leadership					

75. How would you rate your community-managed water facility sustainability over the past 5 years?

1	Improved greatly		4	Declined	
2	Improved		5	Declined greatly	
3	Unchanged		6	Do not know	

76. How would you predict your community-managed water facility future's sustainability for the next 5 years?

1	Will improve greatly		4	Will decline	
2	Will improve		5	Will be the same as now	
3	Will decline greatly		6	Don't know	

77. Do you accept this statement: 'community-managed water are more effective and sustainable than other water supplies'?

YES		**NO**		**Don't know**	

78. Why do you think so?

.....

c) Sustainability- Satisfaction and Willingness to Pay

79. What contributions have been made by the community towards the project? Do these contributions constitute considerable burden to you, in terms of (time, effort and money)?.

Type of contribution		
1	Labor	
2	Monetary	
3	Material	
4	All of the above	
5	Other, specify	

Burden of contribution	Strongly agree	Agree	Neither Agree nor Disagree	Disagree	Strongly disagree
	-1-	-2-	-3-	-4-	-5-
Efforts					
Monetary					
Material					
Time					
Other, specify ……					

80. What kind of contribution do you prefer for capital cost of the project

1	labor		2	monetary		3	Material		4	All of the above	
5	Other, specify …….										

81. What is your daily average water utilization from the community water project? (Bucket 18 lt)……

82. How much do you spend daily on community water facility for household water use? (Ghana Cedis) ……

83. Describe, to what extent are you satisfied with the services you receive with the amount you pay?

1	Very satisfied		2	Satisfied		3	Not satisfied	
4	Not really satisfied		5	Don't know				

84. Since the introduction of community-managed water facility, has the water supply situation changed in your household?

1	Improved much		4	Worsened to some extent	
2	Improved to some extent		5	Worsened much	
3	Not changed		6	Do not know	

85. Since the implementation of community-managed water supply system, has your income proportion for water expenditure changed?

1	Increased much		4	Decreased to some extent	
2	Increased to some extent		5	No change	
3	Decreased much		6	Do not know	

86. What are the main problems you face with community water supply system? (By order of effect, starting with 1=the most problem....to 7=least problem)

1	No enough water at the source	
2	Change of water user fee	
3	Theft	
4	Lack of transparency in financial management	
5	Absence of water attendant	
6	Technical problem (needed mechanical person)	
7	Other, specify	
8	Availability of water vendor	

d) Sustainability-Service Delivery

87. What is your comment on the following issues of water service delivery in your community?

Water service delivery		Answer		
		YES	NO	Don't know
1	High water prices from water vendors			
2	Unavailability of water at the source			
3	Too much time is wasted in search of water			
4	Long queues in fetching water, resulting in			
5	Children risk their lives crossing roads in search for water			

6	Risk in drinking of untreated water from open wells or surface waters			
7	Inaccessible of water			
8	Other, specify ……			

88. To what extent do you think the followings are possible causes of water problems in your community?

Causes of water problems		Answer		
		YES	NO	Don't know
1	CWSA lack technical expertise to handle			
2	Tanker owners arranged with the GWCL to limit water supply			
3	Frequent break down of facility			
4	Inefficient operator to fix some small technical problems			
5	Cost and unavailability of spare parts			
6	Poor management-leadership			

89. Are you satisfied with the quality and services of the water that you use from the community water facility?

Suitability, Quality & service		Answer		
		YES	NO	Don't know
1	Accessibility			
2	Reliability			
3	Equitability			
4	Pressure rate			
5	Functionality of the facility			
6	Quantity			
7	Distance			

90. What are your impressions of the service delivery in your area?

---

e) **Sustainability-Suitability of Community Water Facility**

91. How are you satisfied using the community water facility than other sources that are available in this place, especially in terms of water suitability?

Water suitability		Levels satisfaction					
		20%	40%	60%	80%	100%	Other
1	Taste						

2	Odour						
3	Color						
4	Safe						
5	Clean						

92. How many kilometers away is your nearest water point located from a house? Please estimate the distance and time.

1	Distance to water point (M)	
2	Hours used to get in the water facility point	
3	Hours used to fetch water (M)	

E. Roles of Water Institutions in Community-Managed Water Supply System

93. How would you assess the role of water institutions in decision-making process in your area?

1	Very significant		3	Not significant	
2	Significant		4	Do not know	

94. Which persons or institutions are currently assisting or they have assisted the community-managed water facility? ***multiple answers possible***

1	The government (CWSA)	
2	The government (DA)	
3	The politicians	
4	Religious group	
5	People from the community	
6	Charitable group	
7	Other community social fund	
8	Other NGOs	
9	Other, specify …….	

95. Describe, to what extent the government, donors and NGOs support the following to ensure sustainability of community-managed water system in your community?

A. Government	%										
	10	20	30	40	50	60	70	80	90	100	Other
Support capital cost for the facility											
Maintenance and rehabilitation e.g pumps											
Operation											
Harmonization of local participation											
Support other community projects											

Facilitate technical experts & trainings for facility staffs											
Other, specify ……											

B. Non-Governmental Organizations (NGOs)	**%**										
	10	20	30	40	50	60	70	80	90	100	Other
Support capital cost for the facility											
Maintenance and rehabilitation e.g pumps											
Operation											
Harmonization of local participation											
Support other community projects											
Facilitate technical experts & training for facility staffs											
Advocacy and lobbying											
To influence government & other organizations											
Other, specify ……											

C. Community Based Organizations (CBOs)	**%**										
	10	20	30	40	50	60	70	80	90	100	Other
Maintenance and rehabilitation e.g pumps											
Operation											
Harmonization of local participation in decision-making and collective action											
Support other community projects											
Facilitate trainings for facility staffs											
Advocacy and lobbying											
Other, specify ……											

D. Private Water Sector	**%**										
	10	20	30	40	50	60	70	80	90	100	Other
Consultations for rehabilitation and											
Water supply service (Tanker)											
Operation											
Construction of water infrastructure systems											
Harmonization of local participation											
Support other community projects											
Facilitate trainings for facility staffs											
Other, specify ……											

96. How would you assess the role of the District Assembly in decision-making processes in you are community water facility?

……

97. How would you assess the role of the Water and Sanitation Board (WSB) in decision-making processes in you are community water facility?

……..

98. How would you assess the role of the Water and Sanitation Committee (WATSAN) in decision-making processes in you are community water facility?

……..

99. Describe the role of the private water sector in water supply sector particularly in this community?

…….....

.....

100. Describe, how you are satisfied with the performance of the water institutions in this community?

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101. Is there anything else that you want to say about local participation, community management and sustainability that this interview did not cover?

THANK YOU VERY MUCH FOR YOUR COOPERATION

Appendix 4: Interview guideline for public agencies (CWSA, DA)

INTERVIEW GUIDELINE FOR GOVERNMENT UTILITY- COMMUNITY WATER AND SANITATION AGENCY (CWSA) AND OTHER GOVERNMENT OFFICIALS.

The following instrument seeks the views of CWSA& DAs and Project Manager personnel on local participatio, water management, roles of water institutions and sustainability of community-managed water facility.

1. **Briefly, explain the historical background of the community-managed water supply?**
    - **a)** Its evolution-from traditional to modern water management
    - **b)** Types of community-managed water supply
    - **c)** Criteria for demarcation (peri-urban, rural and small towns)
    - **d)** Stakeholders/actors involved in planning, implementation and monitoring process
    - **e)** What was the situation before the community water supply
2. **How does the concept of local participation evolve in water management issues in this community**
    a) What is local meaning and understanding of the concept 'participation', especially in public goods?
    b) Do you think their local meaning and understanding of participation in public goods is the same like other social goods, e.g. health and education?
    c) What factors shaped the understanding of the concept?
    d) Do you think a local meaning of participation is the same as conceptualized by government?
    e) How are community consulted or informed about the need of the facility
        i. suitability, size, location, design and desirability
        ii. information channels
        iii. institutions and structures on the ground
    f) What is your perception about local participation, social capital and sustainability of community water facility?
3. **What mechanisms or facilities have been in place to ensure local participation in community water facility?**
    a) How such mechanisms or facilities evolved?
    b) To what extent the implementation of the mechanisms and facilities enhanced the performance of community water supply?
        i. Technical efficiency
        ii. Effective tariff collection
        iii. Control of standards and quality service delivery

iv. Enforcement of by-laws, laws, rules and regulations

c) Is there any policy/strategy on 'local participation' in community-managed water supply?
d) What is the level of policy implementation?
e) How is it mainstreamed within DWSTs, WATSANs and communities?
f) Why local participation in community water management, what are motives for participation?

4. What is the level of local participation in community-managed water facility?

a) How local community involved or represented in prioritizing, planning and decision-making process
b) How are community consulted or informed about the need of the facility (suitability, size, location, design and desirability)?
c) What is gender ratio participation in decision-making on water issues?
d) What is the level local participation in community meetings
e) To what extent is the community willing and afford to pay for facility?
f) Do you think their level of participation in community water management is different to other social services, e.g. health and education?

5. In your view, how local participation is linked up with sustainability of community-managed water facility?

a) What are the key indicators that local participation has positive impact on sustainable community water facility?
b) To what extent do community-managed water facility more sustainable and does it compare with other supplies?
c) Do you think Demand Responsive Approach is a determinant for sustainable community-managed water facility?
d) In your area how many community water systems/facility are not functioning, and what are the causes?

6. What are the determinants of local participation and sustainability of community-managed water facility?

a) What are the criteria used to determine (a) local participation (b) sustainability?
b) What structures have been put in place to ensure sustainability?
c) In your view, in which ways has rapid population growth in this community affected local participation in community water and other development projects?
d) Do you think community management model is more sustainable than other management models? ....why do you think so?

7. Briefly, explain the levels of satisfaction in service delivery as provided by community-managed water facility

a) Levels of satisfaction

i. Accessibility and reliability
ii. Quantity
iii. Quality
iv. Equity
v. Costs
vi. Pressure level

b) Are there any people opting to use other sources of water supply than community water facility? Give reasons?

8. **In your opinion, to what extent do you think 'WATSAN', 'DWST', 'WSBs' are an effective institution for sustainable management of community water facility?**

i WATSANs
ii DWST
iii WSBs

a) In mobilizing funds and collection of user fee
b) Harmonizing people's participation
c) Conflict resolution

9. **What are the main 'SWOTs' and challenges of local participation and sustainability in community-managed water facility?**

i SWOTs analysis on local participation and sustainability
   a. Strength
   b. Weaknesses
   c. Opportunities
   d. Threats

ii Challenges
   a local participation
   b sustainable water facility

iii. challenges with politics and politicization
   a) Politics (i.e. formal politics)
   b) Local politics (social and political power relations between different local stakeholders)

1. **What are specific roles of CWSA, WSDB and DAs in community water supply?**

a) To what extent has an equitable tariff structure been put into place based on O&M costs, capital replacement costs and affordability?
   i. What is the criteria for tariff setting
   ii. Capacity of the treasurer
   iii. Financial strength

2. **What roles do other water institutions perform in the community water managed facility**
    a) Government institutions or agents (DWST, DAs and Unit Committee
    b) In what way does political interference manifest in the community water sector in Ghana
    c) Non-Governmental Organisations (NGOs found in this area)
    d) Community Based Organizations (CBOs found in this area
    e) Private Water Institutions
    f) What is the level of private sector involvement in community water facility?
    g) Do you think that communities are able to finance for O&M without any external support
    h) How and to what extent do local participation and water institutions affect sustainability of peri-urban community water supply?
3. **Briefly, explain what roles do WSDB and WATSAN play in respect to management and sustainability of managing community water facility?**
    a) Critical water facility issues e.g facility breakdown, tariffs collection for defaulters
    b) Financing water facility
    c) How do you cope with the challenges?
    d) Collecting, recording and management of the fund
4. **To what extent do other water institutions effective for sustainable community-managed water facility**
    a) Infrastructure system
    b) Operation and maintenance
    c) Financial control, accounts and operations trainings
5. **What is your opinion on the status of current community water supply in your area?**
    a) Service delivery
    b) Financing O&M
    c) Local participation
    d) Sustainability of the water facility

Please, is there anything else that you want to say about local participation, community management and sustainability that this interview did not cover?

THANK YOU VERY MUCH FOR YOUR COOPERATION

Appendix 5: Interview guideline for WSMT and WATSANs

INTERVIEW GUIDELINE FOR WSMT AND WATSAN

The following instrument seeks the views of WSMT and WATSAN members and other Key Locally Dominant People (KLDP) on local participatio, water management, roles of water institutions and sustainability of community-managed water facility.

1. **Briefly explain how long has the community been in existence, or the historical background of this community?**
    a) Economic perspectives
    b) Cultural and social perspectives
    c) Political perspectives
2. **briefly explain the historical background of water supply issues in this community**
    a) What was the situation before community water facility?
    b) What is the current situation

    -Asset performance-capacity conditions

    -asset utilization

    -maintenance history

    c) What is the future prospect of water supply?

    -forward-looking approach

    -performance forecast

    -cost forecast

3. **How does the concept of local participation evolve in water management issues in this community**

    a) What is local meaning and understanding of the concept 'participation', especially in public goods?

    -the attitude towards understanding 'participation'

    b) What factors shaped the understanding of the concept?
    c) Do you think a local meaning of participation is the same as conceptualized by government?

    d) What is your perception about local participation on public goods e.g water?

4. **What mechanisms or facilities have been in place to ensure local participation in community water facility?**

    a) How such mechanisms or facilities evolved?

    b) To what extent the implementation of the mechanisms and facilities enhanced the performance of community water supply?

        i. Technical efficiency

        ii. Effective tariff collection

        iii. Control of standards

        iv. Enforcement of laws, rules and regulations

5. **What is the level of local participation in community-managed water facility?**

    a) How local community involved or represented in prioritizing, planning and decision-making process

    b) How are community consulted or informed about the need of the facility (suitability, size, location, design and desirability)?

    c) What is gender ratio participation in decision-making on water issues?

    d) What is the level local participation in community meetings

    e) What extent is the community's willing and afford to pay for facility?

    f) Do their level of participation in water facility different to other social services?

6. **In your view, how local participation is linked up with sustainability of community-managed water facility?**

    a) What are the key indicators that local participation has positive impact on sustainable community water facility?

    b) To what extent do community-managed water facility more sustainable and does it compare with other supplies?

    c) Do you think Demand Responsive Approach is a determinant for sustainable community-managed water facility?

7. **What are the determinants of local participation and sustainability of community-managed water facility?**

a) What are the criteria used to determine (a) local participation (b) sustainability?

b) What structures have been put in place to ensure sustainability?

c) In your view, in which ways has rapid population growth in this community affected local participation in community water and other development projects?

8. **In your opinion, do you think participation of 'individual or people' as a member of or belong to many voluntary organizations leads to active participation in community water facility? If so, Give reasons**

a) Are there voluntary organizations in this community? How are they involved on local participation? What are their functions?

b) In your opinion, what do think that the following principles have impact on local participation

i. Social networks
ii. Trust
iii. Cooperation

9. **Briefly, explain the levels of satisfaction in service delivery as provided by community-managed water facility**

a) Levels of satisfaction
   i. Accessibility and reliability
   ii. Quantity
   iii. Quality
   iv. Equity and inclusiveness
   v. Costs-funding
   vi. Pressure level

b) Community complaints- (asset performance) water quality, quantity, failure rates and availability

c) Are there any people opting to use other sources of water supply than community water facility? Give reasons?

10. **In your opinion, to what extent do you think 'WATSAN', 'DWST', 'WSBs' are an effective institution for sustainable management of community water facility?**

i WATSANs
ii DWST

iii WSBs

a) In mobilizing funds and collection of user fee

b) Harmonizing people's participation

c) Conflict resolution

a) To what extent has an equitable tariff structure been put into place based on O&M costs, capital replacement costs and affordability?

i. What is the criteria for tariff setting

ii. Capacity of the treasurer

iii. Financial strength

b) What kind of practical training and professional experience are available for WATSAN member?

c) How would you rate the quality of training organized and provided by CWSA and other consultancies, in-terms of content, technical terms and duration of the training?

11. What is your role as WATSAN member with respect to management and sustainability of community water facility?

a) Critical water facility issues e.g facility breakdown, tariffs collection for defaulters

b) Financing water facility

c) How do you cope with the challenges?

d) Collecting, recording and management of the fund

12. What are the main 'SWOTs' and challenges of local participation and sustainability in community-managed water facility?

i SWOTs analysis on local participation and sustainability
   a. Strength
   b. Weaknesses
   c. Opportunities
   d. Threats

ii Challenges
   a local participation
   b sustainable water facility

13. **What roles do water institutions perform in the community water managed facility**

    a) Government institutions or agents (CWSA, DWST, DAs and Unit Committee

    b) Non-Governmental Organisations (NGOs) found in this area

    c) Community Based Organizations (CBOs) found in this area

    d) Private Water Institutions

    e) What is the level of private sector involvement in community water facility?

    f) How and to what extent do water institutions affect sustainability of peri-urban community water supply?

14. **To what extent do water institutions support community-managed water facility for sustainable manner?**

    a) Infrastructure system

    b) Operation and maintenance

    c) Financial control, accounts and operations trainings

15. **What is your opinion on the status of current community water supply in your area?**

    a) Service delivery

    b) Financing O&M

    c) Local participation

    d) Sustainability of the water facility

Please, is there anything else that you want to say about local participation, community management and sustainability that this interview did not cover?

THANK YOU VERY MUCH FOR YOUR COOPERATION

Appendix 6: Interview guideline for NGOs

INTERVIEW GUIDELINE

The following instrument seeks the views of NGOs and CBOs on local participation, water management, roles of water institutions and sustainability of community-managed water facility.

1. **Briefly explain, the historical background of the community-managed water supply?**

a) How long has your organization been working in water sector in Ghana

b) Water sector evolution

i. From traditional to modern management
ii. Top-down to down-up approach
iii. Stakeholders/actors involved in planning, implementation and monitoring process
iv. Government policies

c) Types of community-managed water supply

d) What was the situation before the community water supply?

e) What are the future prospects of community water supply?

2. **How does the concept of local participation evolve in water management issues in communities?**

a) What is local meaning and understanding of the concept 'participation', especially in public goods?

b) What factors shaped the understanding of the concept?

c) Do you think a local meaning of participation is the same as conceptualized by government?

e) How are community consulted or informed about the need of the facility

i. suitability, size, location, design and desirability
ii. Information channels
iii. Institutions and structures on the ground

e) What is your perception about local participation and sustainability of community water facility?

3. **What mechanisms or facilities have been in place to ensure local participation in community water facility?**

a) How such mechanisms or facilities evolved?

b) To what extent the implementation of the mechanisms and facilities enhanced the performance of community water supply?

i. Technical efficiency
ii. Effective tariff collection
iii. Control of standards
iv. Enforcement of laws, rules and regulations

c) Is there any government policy or act and or strategy on 'community participation' in Community-managed water supply?

i. Awareness about the policy/act
ii. What is the level of policy/act implementation?

e) How is it mainstreamed within your organization and communities?

f) Why local participation in community water management, what are motives for participation?

4. What is the level of local participation in community-managed water facility?

a) How local community involved or represented in prioritizing, planning and decision-making process

b) How are community consulted or informed about the need of the facility (Suitability, size, location, design and desirability)?

c) What is gender ratio participation in decision-making on water issues?

d) What is the level local participation in community meetings?

e) To what extent is the community willing and afford to pay for facility?

5. In your view, how local participation is linked up with sustainability of community-managed water facility?

a) What are the key indicators that local participation has positive impact on sustainable community water facility?

b) To what extent do community-managed water facility more sustainable and does it compare with other supplies?

c) Do you think Demand Responsive Approach is a determinant for sustainable community-managed water facility?

6. What are the determinants of local participation and sustainability of

community-managed water facility?

a) What are the criteria used to determine (a) local participation (b) Sustainability.
b) What structures have been put in place to ensure sustainability?
c) In your view, in which ways has rapid population growth in this community affected local participation in community water and other development projects?

7. In your opinion, do you think participation of 'individual or people' as a member of or belong to many voluntary organizations leads to active participation in community water facility?

a) Social networks
b) Trust
c) Cooperation

8. Briefly, explain the levels of satisfaction in service delivery as provided by community-managed water facility

a) Levels of satisfaction
   i Accessibility and reliability
   ii Quantity
   iii Quality
   iv Equity and inclusiveness
   v Costs-funding
   vi Pressure level
b) Are there any people opting to use other sources of water supply than community water facility? Give reasons?

9. In your opinion, to what extent do you think 'WATSAN', 'DWST', 'WSBs', are an effective institution for sustainable management of community water facility?

   i WATSANs
   ii DWST
   iii WSBs
a) In mobilizing funds and collection of user fee
b) Harmonizing people's participation
c) Conflict resolution

10. What are the main 'SWOTs' and challenges of local participation and sustainability in community-managed water facility?

i SWOTs analysis on local participation and sustainability
   a. Strength
   b. Weaknesses
   c. Opportunities
   d. Threats
ii Challenges
   a local participation

b sustainable water facility

iv. challenges with politics and politicization

a) Politics (i.e. formal politics)

c) Local politics (social and political power relations between different local stakeholders)

11. What are specific roles of your organization in community water supply?

a) Infrastructure system
b) Operation and maintenance
c) Financial support
d) Community participation
e) What are your policies regarding the community water sector in Ghana?
F) How is you are organization support the community through participatory approach?

12. What roles do water institutions perform in the community water managed facility?

a) In what way does political interference manifest in the community water sector in Ghana

b) What is the level of private sector involvement in community water facility?

c) Do you think that communities are able to finance for O&M without any external support

d) How and to what extent do local participation and water institutions affect sustainability of peri-urban community water supply?

Please, is there anything else that you want to say about local participation, community management and sustainability that this interview did not cover?

THANK YOU VERY MUCH FOR YOUR COOPERATION

Appendix 7: Interview guideline for private consultancies

INTERVIEW GUIDELINE FOR PRIVATE CONSULTANCY IN WATER SECTOR

The following instrument seeks the views of private consultancies in water sector on local participatio, water management, roles of water institutions and sustainability of community-managed water facility.

1. **Briefly, explain the historical background of the community-managed water supply?**
    a) Its evolution-from traditional to modern water management
    b) Types of community-managed water supply
    c) Criteria for demarcation (peri-urban, rural and small towns)
    d) Stakeholders/actors involved in planning, implementation and monitoring process
    e) What was the situation before the community water supply
    f) Why do you think there is a need for feasibility study
    g) What are major factors considered during the feasibility study

1. **How does the concept of local participation evolve in water management issues in this community**
    a) What is local meaning and understanding of the concept 'participation', especially in public goods?
    b) Do you think their local meaning and understanding of participation in public goods is the same like other social goods, e.g. health and education?
    c) What factors shaped the understanding of the concept?
    d) Do you think a local meaning of participation is the same as conceptualized by government?
    e) How are community consulted or informed about the need of the facility
        i. suitability, size, location, design and desirability
        ii. information channels
        iii. institutions and structures on the ground
    f) What is your perception about local participation, social capital and sustainability of community water facility?
2. **What mechanisms or facilities have been in place to ensure local participation in community water facility?**
    a) How such mechanisms or facilities evolved?
    b) To what extent the implementation of the mechanisms and facilities enhanced the performance of community water supply?
        i. Technical efficiency

ii. Effective tariff collection
iii. Control of standards and quality service delivery
iv. Enforcement of by-laws, laws, rules and regulations

c) Is there any policy/strategy on 'local participation' in community-managed water supply?
d) What is the level of policy implementation?
e) How is it mainstreamed within DWSTs, WATSANs and communities?
f) Why local participation in community water management, what are motives for participation?

3. What is the level of local participation in community-managed water facility?

a) How local community involved or represented in prioritizing, planning and decision-making process
b) How are community consulted or informed about the need of the facility (suitability, size, location, design and desirability)?
c) What is gender ratio participation in decision-making on water issues?
d) What is the level local participation in community meetings
e) To what extent is the community willing and afford to pay for facility?
f) Do you think their level of participation in community water management is different to other social services, e.g. health and education?

4. In your view, how local participation is linked up with sustainability of community-managed water facility?

a) What are the key indicators that local participation has positive impact on sustainable community water facility?
b) To what extent do community-managed water facility more sustainable and does it compare with other supplies?
c) Do you think Demand Responsive Approach is a determinant for sustainable community-managed water facility?
d) In your area how many community water systems/facility are not functioning, and what are the causes?

5. What are the determinants of local participation and sustainability of community-managed water facility?

a) What are the criteria used to determine
b) Local participation
c) Sustainability?
d) What structures have been put in place to ensure sustainability?
e) In your view, in which ways has rapid population growth in this community affected local participation in community water and other development projects?
f) Do you think community management model is more sustainable than other management models? ....why do you think so?

g) How and to what extent do local participation and water institutions affect sustainability of peri-urban community water supply?

6. **Briefly, explain the levels of satisfaction in service delivery as provided by community-managed water facility**
   a) Levels of satisfaction
      i. Accessibility and reliability
      ii. Quantity
      iii. Quality
      iv. Equity
      v. Costs
      vi. Pressure level
   b) Are there any people opting to use other sources of water supply than community water facility? Give reasons?
7. **In your opinion, to what extent do you think 'WATSAN', 'DWST' and 'WSBs' are an effective institution for sustainable management of community water facility?**
   i WATSANs
   ii DWST
   iii WSBs
   a) In mobilizing funds and collection of user fee
   b) Harmonizing people's participation
   c) Conflict resolution

8. **What are roles of CWSA, WSDB, Das and NGOs and private water institutions in community water supply?**
   a) Government agencies
   b) NGOs and CBOs
   c) Private water institutions
   d) In what way does political interference manifest in the community water sector in Ghana
   e) What is the level of private sector involvement in community water facility?
   f) Do you think that communities are able to finance for O&M without any external support

9. **What are the main 'SWOTs' and challenges of local participation and sustainability in community-managed water facility?**
   iii SWOTs analysis on local participation and sustainability
      a. Strength
      b. Weaknesses
      c. Opportunities

d. Threats

iv Challenges

a local participation

b sustainable water facility

v. challenges with politics and politicization

a) Politics (i.e. formal politics)

d) Local politics (social and political power relations between different local stakeholders)

10. To what extent do other water institutions effective for sustainable community-managed water facility

a) Infrastructure system
b) Operation and maintenance
c) Financial control, accounts and operations trainings

11. What is your opinion on the status of current community water supply in your area?

a) Service delivery
b) Financing O&M
c) Local participation
d) Sustainability of the water facility

Please, is there anything else that you want to say about local participation, community management and sustainability that this interview did not cover?

THANK YOU VERY MUCH FOR YOUR COOPERATION

Appendix 8: Factor analysis (factor loadings) results for local meanings of 'participation'

Appendix 9: SEM results factors influences local meanings of 'participation'

Appendix 10: Results (logit regression model) determinants for household participation in peri-urban community water management