

UNIVERSITY OF CAPE COAST

COMMUNITY OWNERSHIP AND MANAGEMENT OF RURAL  
DRINKING WATER FACILITIES IN THE BUILSA DISTRICT

BY

EMMANUEL ADII ANGACHAAB

DISSERTATION SUBMITTED TO THE INSTITUTE FOR  
DEVELOPMENT STUDIES OF THE FACULTY OF SOCIAL SCIENCES,  
UNIVERSITY OF CAPE COAST IN PARTIAL FULFILMENT OF THE  
REQUIREMENTS FOR AWARD OF MASTER OF ARTS DEGREE IN  
ENVIRONMENTAL MANAGEMENT AND POLICY

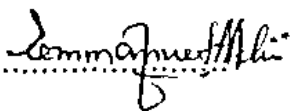
|               |               |
|---------------|---------------|
| CLASS NO.     |               |
| ACCESSION NO. |               |
| 241598        |               |
| CAT. CHECKED  | FINAL CHECKED |

JULY 2011

## DECLARATION

### Candidate's Declaration

I hereby declare that this dissertation is the result of my own original work and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature:  Date: 22/07/11

Name: Emmanuel Adu Angachaab

### Supervisor's Declaration

I hereby declare that the preparation and presentation of the dissertation were supervised in accordance with the guidelines on supervision of dissertation laid down by the University of Cape Coast

Supervisor's Signature:  Date: 25/7/11

Name: Professor S. B. Kendie

## ABSTRACT

This study assessed the management arrangements and capacity at the community and District Assembly level for the ownership and management of boreholes fitted with hand pumps under the Community Water Project (COWAP) in the Builsa District of the Upper East Region of Ghana. Data was collected from households, community management groups of the facilities, the District Water and Sanitation Team (DWST) and the Desk Officer for water and sanitation at the District Assembly. Visits were made to hand pump sites to assess their condition. Different sampling methods and tools were used to collect qualitative and quantitative data from primary and secondary sources.

The study revealed that majority of community members understand the concept of community ownership and management (COM) of their water point sources and had formed management groups. However, the infinite tenure of office coupled with lack of motivation and the uncooperative nature of some community members led to high drop out rates and the collapse of some committees.

It is recommended that there should be a specified tenure of office for Pump Management Committee (PMC) members subject to renewal based on satisfactory work. Training and refresher courses should be organized for members.

## ACKNOWLEDGEMENTS

I wish to thank my supervisor, Professor S.B. Kendie for the immense role he played in guiding, criticizing and directing me during the onset of the dissertation through the process and to the final output. I say a big thank you for your effort.

My thanks also go to my field officers, Michael Adabuin, Emmanuel Adekaldu, Joseph Awenimare, Akabera Nelson, Ateng Samuuel, and Ataniba Godwin, who despite field challenges ensured that the required data was collected. Your understanding to get back to the field any time lapses were detected during debriefing after field work is worth commendation.

I highly acknowledge the continuous moral support of my family for edging me on to complete the dissertation in the face of heavy work load at my office. My wife, Mrs. Patricia Adii never stopped asking me when I will finish with my dissertation. I say thank you for your concern and support.

Finally, I wish to thank all the respondents who made time for me despite their farming activities for the success of the exercise. For all others who have directly or indirectly played a role in this assignment but their names have not been mentioned, I say thank you.

**DEDICATION**

To the Abi family.

## TABLE OF CONTENTS

|   | Page |
|---|------|
| Contents                                  |      |
| DECLARATION                               | ii   |
| ABSTRACT                                  | iii  |
| ACKNOWLEDGEMENTS                          | iv   |
| DEDICATION                                | v    |
| TABLE OF CONTENTS                         | vi   |
| LIST OF TABLES                            | ix   |
| LIST OF FIGURES                           | x    |
| LIST OF ACRONYMS                          | xi   |
| <br>                                      |      |
| CHAPTER ONE: INTRODUCTION                 | 1    |
| Background to the study                   | 1    |
| Statement of the problem                  | 4    |
| Objectives of the study                   | 7    |
| Research questions                        | 8    |
| Relevance of the study                    | 8    |
| Scope of the study                        | 9    |
| Organisation of the study                 | 10   |
| <br>                                      |      |
| CHAPTER TWO: REVIEW OF LITERATURE         | 11   |
| Introduction                              | 11   |
| Approaches to community water delivery    | 11   |
| New approaches to rural water delivery    | 13   |
| Community water delivery in Ghana         | 19   |
| Institutional capacity for water delivery | 22   |

|   |           |
|---|-----------|
| Community ownership and management (COM) under COWAP) | 24        |
| Summary   | 26        |
| <br>  |           |
| <b>CHAPTER THREE: METHODOLOGY</b>                     | <b>28</b> |
| Introduction  | 28        |
| The study area  | 28        |
| Location  | 28        |
| Climate   | 28        |
| Drainage  | 29        |
| Vegetation  | 29        |
| Soils   | 31        |
| Demography  | 31        |
| Settlement morphology                                 | 32        |
| Access to health                                      | 34        |
| Access to education                                   | 34        |
| Access to water                                       | 35        |
| Energy supply   | 35        |
| The study design                                      | 36        |
| Study population                                      | 36        |
| Sampling  | 37        |
| Data collection instruments                           | 39        |
| Pre-testing of data collection instruments            | 40        |
| Data processing and analysis                          | 42        |
| Problems of data collection and solutions             | 42        |

|  |    |
|--|----|
| CHAPTER FOUR: RESULTS AND DISCUSSION   | 44 |
| Introduction   | 44 |
| Background characteristics of household respondents  | 44 |
| Perceptions on community ownership and management  | 51 |
| Institutional arrangements and capacity for the management<br>of the hand pumps  | 55 |
| Capacity to manage the water facilities  | 57 |
| Availability of hand pump parts for repairs  | 64 |
| Effectiveness of pump management committee executives  | 65 |
| <br>   |    |
| CHAPTER FIVE: SUMMARY, CONCLUSIONS AND<br>RECOMMENDATIONS  | 72 |
| Introduction   | 72 |
| Summary of findings  | 72 |
| Conclusions  | 75 |
| Recommendations  | 75 |
| REFERENCES   | 78 |
| APPENDICES   | 82 |
| I: Interview schedule for the collection of data on community<br>ownership and management of drinking water facilities in<br>the Builsa District of the Upper East Region of Ghana | 82 |
| II: Interview Schedule for Pump Management Committees  | 85 |
| III: Interview schedule for Pump Caretakers  | 88 |
| IV: Check list for hand pump site visits   | 90 |
| V: Focus group discussion guide  | 91 |



## LIST OF TABLES

| Table  | Page |
|--|------|
| 1 Decentralised functions of water delivery            | 21   |
| 2 Sub-samples of study populations                     | 38   |
| 3 Age of household respondents                         | 45   |
| 4 Gender and educational attainment of households      | 47   |
| 5 Age of pump management committee executives          | 48   |
| 6 Gender and educational attainment of PMC executives  | 49   |
| 7 Age of pump caretakers                               | 50   |
| 8 Gender and educational attainment of pump caretakers | 51   |
| 9 Perception on ownership of water point facility      | 52   |
| 10 Management of hand pumps                            | 53   |
| 11 Pump management committee formation                 | 54   |
| 12 Stability of pump management committees             | 58   |
| 13 Training of pump management committees              | 59   |
| 14 Training of pump caretakers                         | 60   |
| 15 Tariff contributions                                | 62   |
| 16 Amount paid per household annually                  | 62   |
| 17 Where tariff collected is deposited                 | 63   |
| 18 Physical conditions of hand pumps and pump sites    | 65   |
| 19 Decisions implemented in the last 12 months         | 67   |
| 20 Downtime of hand pumps                              | 68   |
| 21 Satisfaction with service delivery                  | 71   |

## LIST OF FIGURES

| Figure   | Page |
|--|------|
| 1 Community management model                     | 14   |
| 2 Map of Builka District                         | 30   |
| 3 Marital status of household respondents        | 46   |
| 4 Availability of hand pump spare parts          | 64   |
| 5 Meetings held with community in last 12 months | 66   |
| 6 Conflicts between PMCs and community members   | 69   |

## LIST OF ACRONYMS

|        |   |
|--------|---|
| ADB    | African Development Bank                                  |
| AM     | Area Mechanic   |
| CBO    | Community Based Organisation                              |
| CM     | Community Management                                      |
| CIDA   | Canadian International Development Agency                 |
| COM    | Community Ownership and Management                        |
| COWAP  | Community Water Project                                   |
| CWSA   | Community Water and Sanitation Agency                     |
| CWSD   | Community Water and Sanitation Division                   |
| DICAP  | District Capacity Building Project                        |
| DWST   | District Water and Sanitation Team                        |
| FGD    | Focus Group Discussion                                    |
| GAP    | Ghana Assistance Project                                  |
| GWCL   | Ghana Water Company Limited                               |
| GWSC   | Ghana Water and Sewerage Corporation                      |
| HPC    | Hand Pump Caretaker                                       |
| IDWSSD | International Drinking Water Supply and Sanitation Decade |
| III    | Individual In-depth Interview                             |
| IRC    | International Water and Sanitation Centre                 |
| MDWST  | Municipal District Water and Sanitation Team              |
| MMDA   | Metropolitan Municipal District Assembly                  |
| MTDP   | Medium Term Development Plan                              |
| NCWSP  | National Community Water and Sanitation Programme         |
| NGO    | Non- Governmental Organisation                            |

|        |  |
|--------|--|
| NWP    | National Water Policy                    |
| O&M    | Operation and Maintenance                |
| PMC    | Pump Management Committee                |
| PWD    | Public Works Department                  |
| RWS    | Rural Water Supply                       |
| SPSS   | Statistical Package for Social Scientist |
| UNDP   | United Nations Development Programme     |
| UNICEF | United Nations Children Emergency Fund   |
| URWSP  | Upper Region Water Supply Project        |
| VEW    | Village Extension Worker                 |
| VLOM   | Village Level Operation and Maintenance  |
| WATSAN | Water and Sanitation Team                |
| WSD    | Water Supply Division                    |
| WUP    | Water Utilization Project                |

## CHAPTER ONE

### INTRODUCTION

#### **Background to the study**

The provision of safe and adequate water supplies for domestic use is a good indicator for determining the health and socio-economic status of any community. Hence the statement "water is life". Many diseases including diarrhoea, typhoid and dysenteries can be reduced by adequate water supply and sanitation. Hopkins and Richards (1984) have concluded that there are considerable savings in medical treatment (including cost of medicine), travel costs, income and time.

The availability of potable water has the potential to act as a catalyst for economic growth. The provision of reliable water supply lessens the burden on women and children who are often the water fetchers at home. The provision of water near or in the home has been known to free women to attend to other more rewarding tasks such as increased time for child care, food preparation and agricultural production (ADB, 1989). Improvement in water supply can result in better health and in social, economic and community development (Khan, 1997). It is for these reasons that government expenditure on rural water delivery continue to increase annually. For example government expenditure increased

from 4.12 million Ghana cedis in 2003 to 11.77 million in 2006 and further to 18.6 million in 2007 (CWSA 2007).

Gersha and Moigne (1999) pointed out that over one billion of the world's six billion people lack access to safe drinking water. This has necessitated nations to institute measures to enhance the supply of potable water to their citizenry. In Ghana, rural water supply was supply-driven and centrally managed by a government institution. Many rural water systems were provided without beneficiaries contributing to the capital, Operation and Maintenance (O&M) costs or these costs were highly subsidized by the state (Kendie, 1994). This was met with several challenges. This problem is derived in part from earlier conception that water is a fundamental human requirement and must not be denied to the poor (Kendie, 1992). The Upper Region Water Supply Project (URWSP) like all other rural drinking water projects in northern Ghana was instituted in 1973 with the objective of providing clean water to assist in eliminating water borne diseases and enhance human health and productivity. The project did not emphasise community participation at any stage of its implementation. The hand pumps installed on the wells were such that the local inhabitants knew little about their operation and maintenance (Kendie, 1994).

The then Ghana Water and Sewerage Corporation (GWSC) centrally managed the facilities of the URWSP with funding and logistics such as spare parts, vehicles and motorbikes from the Canadian International Development Agency (CIDA). As pointed out by Kendie (1995), operation and maintenance (O&M) is crucial to successful management and sustainability of water supply

and sanitation systems whatever the level of technology, infrastructure and existing institutional framework. The top-down central management system by the GWSC soon faced several challenges. Some of these challenges were derived in part from the earlier conception that water is a fundamental human right and as such should not be denied anybody irrespective of tribe or race. This conception has been highly upheld by the rural folk and is strongly embedded in their cultural practices. This cultural practice is further supported by "the access to water principle" under the water policy of Ghana (2007:15) which recognises the fundamental right of all people without discrimination to safe and adequate water to meet basic human needs. In the Upper East Region, water is traditionally perceived as a free gift of nature. Therefore the challenge from the management of potable water supply systems from a free gift of nature to a scarce economic good according to Bacho (2001) has to do with the sustainability of the systems based on the following critical issues: sense of ownership and responsibility, understanding of management issues and accountability, ability to operate and maintain the technology.

Earlier studies by Kendie (1992) reported that 33 percent of the 2,600 hand pumps were inoperative at any one time during the 1980s. Similarly, for the 3,000 Wells' Project in Southern Ghana, at least 50 percent of the hand pumps were inoperative at any one time. The need for the sustainability of the water facilities provided while ensuring an increase in coverage of potable water for rural people became a major challenge to government. The United Nations General Assembly Declaration of 1980-1990 as the International Drinking Water

Supply and Sanitation Decade (IDWSSD) throughout the world provided an avenue for the government of Ghana to review its policies on water and sanitation to address some of the challenges faced as well as to conform to international standards. Of significant importance in its review is the adoption of the concept of Community Ownership and Management (COM), which is one of the core pillars contained in the declaration in the provision of water and sanitation facilities to rural communities and small towns.

#### **Statement of the problem**

The URWSP provided water facilities without beneficiaries either contributing to the capital cost or operation and maintenance costs. The water facilities were centrally managed by the Ghana Water and Sewerage Corporation (GWSC) now Ghana Water Company Limited (GWCL). As observed by Kendie (1992), managing rural water supply successfully means operating and maintaining a water system on a day-to-day basis so that the system continues to work and supply water as planned. This requires adequate funding for operation and maintenance. Ferranti (1988 as cited in Kendie, 1992) reviewed community managed rural water projects in Central Peru and noted that difficulties at ensuring sustainable operations arose from financial problems. In Ghana, inadequate maintenance funding is a problem. The problem is partly due to inadequate budgetary allocation by Government to the sector and the dwindling donor support. This has brought about negative consequences on the sustainability of the facilities provided under the URWSP.



The need to sustain the water facilities provided while at the same time ensuring increase in coverage of potable water for rural people became a major challenge to government. To address these problems, two phases of a Water Utilisation Project (WUP 1&2) from 1985-1992 were implemented to upgrade the capacity of pump communities and the Ghana Water and Sewerage Corporation (GWSC) to maintain and manage the pumps and to improve the sanitation of the pump sites so as to maximise health benefits. The involvement of the communities in these programmes sought to achieve long-term self-sufficiency by building the capacities of some members of the communities to maintain their own water supplies (UNICEF, 1999). The introduction of tariffs on water usage by beneficiaries to supplement the maintenance of the pumps was faced by the problems of payments and accountability by collectors. The result was that some users either simply refused to pay or stopped using the hand pump.

To address the challenges arising out of the top down and limited community participation in the management of the hand pumps, the concept of Community Ownership and Management (COM) was piloted using 50 boreholes fitted with hand pumps under the URWSP in some communities within the Bolgatanga Municipality from 1989-1992. The pilot project dubbed "UNDP 50 Wells Project" had as its goal to build the capacities of beneficiary communities in the project area to own, manage and operate their water facilities in a sustainable manner. The outcome was the formation and training of community level groups to oversee the operation and maintenance of the hand pumps. The

groups included Village Extension Workers (VEWs), Area Mechanics, Pump Mechanics and Pump Management Committees (PMCs).

Following the success of the pilot project, the Community Water Project (COWAP), was launched in 1993 to scale-up the concept of COM to cover both the Upper East and Upper West regions of Ghana. The government of Ghana in 1994 launched the National Community Water and Sanitation Programme (NCWSP). A Community Water and Sanitation Division (CWSD) under the then Ghana Water and Sewerage Corporation (now Ghana Water Company Limited-GWCL) was established to implement the NCWSP. The CWSD was later changed by an Act of Parliament (Act 654 of 1998) into the Community Water and Sanitation Agency (CWSA). CWSA has only national and regional staff. To ensure the effective implementation and ownership of water facilities provided, Municipal/District Water and Sanitation Teams and Pump Management Committees are formed at the Municipal/District Assembly and Community levels respectively. While the Municipal/District Water and Sanitation Teams facilitate in the planning for water and sanitation facilities, supervise and monitor the implementation of water and sanitation projects and support community level structures in their operation and management of facilities, the Pump Management Committees are responsible for the operation and management of the facilities at the community level. This approach is in line with the ongoing decentralization process.

Since the completion of the COWAP in 2000, there is little information about the actual ability and willingness of communities to own, operate and manage the water facilities. This need has further been heightened following the observation by Essaw (2001) that in the Central Region 50 percent of vacancies that had occurred in membership of Water and Sanitation (WATSAN) Committees remained unfilled. Similarly, at the 2007 Community Water and Sanitation Technical and Software forum held at Cape Coast, the Eastern region reported that 48 percent of Water and Sanitation(WATSAN) Committees responsible for management of water point's facilities were not active or functional due to resignation, migration or death. Also, only 388 out of 641 WATSANs visited had some money in their bank accounts for the maintenance of their facilities (CWSA, 2007). The Builsa District was one of the beneficiary districts to the Community Water Project (COWAP) that transferred ownership and management of boreholes fitted with hand pumps to the beneficiary communities. In the light of these, what is the state of the operation and management of the water systems in the district to ensure sustainable drinking water supply?

### **Objectives of the study**

The main objective of the study is to assess the institutional structures, their capacity and effectiveness in the ownership and management of the hand pumps fitted by COWAP for rural communities in the Builsa District of the

Upper East Region. Specifically, the study seeks to achieve the following objectives:

- Assess the perception of community members about the concept of community ownership and management of the water facilities;
- Assess the institutional arrangements and capacity for the management of the water facilities;
- Assess the effectiveness in the operation and maintenance of the water facilities, and
- Make recommendations for improvement of the management system of the water facilities.

#### **Research questions**

The research seeks to answer the following questions:

- How do communities perceive the ownership of the water facilities?
- What is the institutional capacity at both the community and district level for the sustainability of the water facilities?
- How effective is the management system for the facilities?

#### **Relevance of the study**

Ghana's Water vision for 2015 has the main objective to promote an efficient and effective management system and environmentally sound development of all water resources in Ghana. The overall goal of the National Water Policy (NWP) is to "achieve sustainable development, management and

use of Ghana's water resources to improve health and livelihoods, reduce vulnerability while assuring good governance for present and future generations" (NWP, 2007). To achieve this, the concept of COM in the provision of water facilities for rural and small communities has become the preferred option. The concept of COM is also in line with the ongoing decentralisation reforms.

The study is therefore intended to provide information on the experiences and challenges in the ownership and management of rural water supply under the COWAP in the Builsa District of the Upper East Region. The study will also serve as a reference point to the Regional Water and Sanitation Team (RWST) of the CWSA, the Builsa District Assembly and other stakeholders in the provision of rural water supply. The study will in addition, contribute knowledge and the discourse on COM of rural water facilities. The findings of the research could also serve as a baseline for further research.

#### **Scope of the study**

The research is a case study on COM of rural water facilities provided by COWAP to rural communities in the Builsa District of the Upper East Region of Ghana. The study explored the community perceptions of COM, the institutional capacity and responsibility and support for the management of the water facilities for sustainability. The study also considered the socio-cultural and economic factors in the management of the water facilities.

## **Organisation of the study**

The study is organised into five chapters. Chapter One contains the background to the study; the statement of the problem; the objectives of the study; the research questions; the relevance of the study, the scope of the study and the organisation of the study. Chapter Two is the literature review and includes among others the concept of COM; principles of COM; types of community water management, the Ghana rural water supply sector; the Community Water and Sanitation Agency (CWSA); a critique of the rural water delivery sector and the agenda for reform. Chapter Three captures the methodological approach; a description of the study area; the study design the study population; the target population; data collection; the pre-testing of instruments; the main field survey; problems of data collection and solutions; data processing and analysis. Chapter Four looks at the findings on the perception of community members on the COM concept. Chapter Five is a presentation on the findings, discussion and interpretations, summary, conclusions and recommendations.

## **CHAPTER TWO**

### **REVIEW OF LITERATURE**

#### **Introduction**

This chapter looks at the traditional approach to community water delivery and the challenges encountered. The development and adoption of new approaches following the launch of the Water and Sanitation Decade of the 1980's to address the challenges of the old approach is given prominence. The community management model and the structure of community water delivery in Ghana are discussed. The arrangements under COWAP for COM for the hand pumps provided are also discussed. The chapter ends with a summary of the various approaches to community water delivery over the decades.

#### **Approaches to community water delivery**

The water supply sector in Sub-Saharan Africa has traditionally been dependent on international and bilateral donors. These donors influence government policy decisions and dictate the terms under which funds can be used thus reducing government autonomy. Traditionally, donors' approach to rural water supply in Africa has been that of projects with a definite lifespan. During the 1960s and 1970s, international and national efforts focused on increasing water coverage to rural communities through the top-down supply driven

approaches. The approach did not consider long-term strategies for on-going support in the form of institutional management, monitoring and regulation. Implementers' leave the area after the end of the project period since budget allocation for institutional support ends with the completion of the project. As observed by Davis, J and Garvey (1993), this project paradigm, though convenient for external donors and implementing organisations, makes sustainability partnerships and ongoing institutional support to beneficiary communities' non-existent. Issues of sustained management, financing and regulation, appropriate policy change, technology choice, maintenance and long-term rehabilitation strategies, which are key for sustainability, are neglected.

In Ghana, rural water delivery dates back to the pre-independent era where the Department of Rural Water Development was established in 1948 as an affiliate of the Geological Survey Department and responsible for hydro-geological investigations for drilling. In 1958, the Rural Water Department merged with the Hydraulic Division of the Public Works Department (PWD), then responsible for urban water supply. The merged institution became the Water Supply Division (WSD) of the PWD under the Ministry of Works and Housing, with responsibility for both urban and rural water supply. In 1965, the WSD of PWD was changed into the Ghana Water and Sewerage Corporation by an Act of Parliament, Act 1965, (Act 310) with the mandate to provide potable water and sewerage facilities and services to both urban and rural areas ( Act 310, 1965)

This traditional approach to Rural Water Supply (RWS) has frequently resulted in services that have not been sustained. The result has often been that



governments tend to pay more attention to building new facilities than to ensuring the use of existing ones. Generally, breakdowns of already existing water facilities are high, which increases the demand for new ones not only to replace the broken down ones but also to increase coverage to cater for the increasing population. As observed by Kendie in Boateng (2007), free or highly subsidized water policies have had negative consequence for operational sustainability. This has led to the adoption of community based approaches in the delivery of water services.

#### **New approaches to rural water delivery**

The Water and Sanitation Decade of the 1980's has demonstrated that achieving lasting benefits from water supply interventions involve more than building facilities. The Drinking Water Supply and Sanitation Decade (IDWSSD) announced and adopted the slogan "Water for All" at the World Water Conference in Argentina. The conference recognised that to come close to accomplishing this goal, a "radical overhaul of precepts and investment strategies governing the proliferation of taps, pumps and pipes in the developing world" was required (Black, 1998). The Decade placed emphasis on the provision of water and sanitation facilities; effective central government planning; the formation of National Action Committees to spearhead planning and management of water and sanitation projects and the introduction of the community involvement paradigm. This idea marked an important step towards basing the provision of services on demand, rather than the conventional supply-driven model.

In Sub-Saharan Africa, the community management model as depicted in figure 1 is the most common partnership approach adopted. The concept of community management of rural water facilities holds great potential for the promotion and implementation of sustainable water supply in developing countries. It also appears that the use of the community management concept may significantly improve the effectiveness of donor resources to expand coverage and thereby help countries meet their water goals. In the model, local governments act as enabler and are responsible for regulation, facilitation and monitoring of sector stakeholders. The provision of information, follow-up training and technical support is also given. The private sector is responsible for implementation and the community based organisations (CBOs) are responsible for management, financing, operation and maintenance.

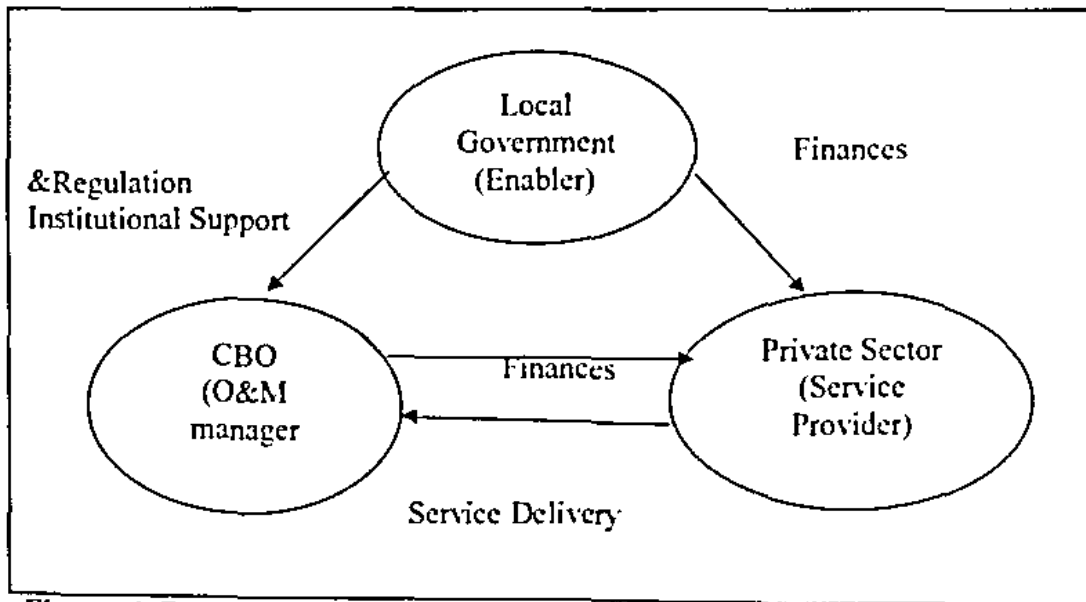


Figure: 1 Community management model

Source: IRC 1998

Community management however, requires dynamic management and leadership at all levels. The capacity and incentive to sustain stakeholders' interest to perform their roles is very essential. This is influenced by government policy. The community management model is based on the premise that water is an economic good that has a value and it should be managed at the lowest appropriate level with users involved in the planning and implementation of projects (Sara and Katz 1998). In Ghana, the general transition from top-down (supply-driven) to bottom-up (demand-driven) approaches fits with broader trends towards decentralization of government services and transfer of responsibilities to lower levels of government and ultimately to communities themselves. The concept of community participation implies that beneficiaries are involved in development activities affecting them. This is most applicable where the decentralization process is at a more advanced stage and where local tiers of government have greater capacity. The community-based approach provides a means to better tailor the water and sanitation systems to communities' needs and preferences.

In Guatemala for example, the partnership approach involving community-based organisations and government has been successful in the development of some 125 sustainable community managed water systems benefiting more than 90,000 people in rural areas. Narayan (1995) from the analysis of 121 case studies of rural water supply projects in different countries shows that user participation in rural water projects indeed contributes significantly to project effectiveness. She used different measures of participation

differentially between options where water users were merely provided information about the project to where users were empowered to make decisions. Also the measures used reflected whether the users participated in all stages of the projects design, construction, operation, and maintenance.

Sara and Katz (1998) observed that sustainability of water systems is higher in communities where demand-responsive approaches were emphasised and water users participated in system design than in those where the approach was not followed. Specifically, they found that in communities where household members made informed choices about whether to build a system, the type of system to build, and the level of service to be provided, sustainability of water systems was higher. The results were obtained from quantitative data collected through households and water committees' surveys and technical assessment of water systems and supplemented by qualitative data from community members and government officials.

Field experience has shown that sustainability of rural water facilities goes beyond participation, even though community participation provides the enabling environment. The concept of community management as applied to rural water supply systems has generally been concerned with questions of management, the participation of women and in-kind contributions, all of which involve community participation and therefore were said to provide sustainability. Community management refers to the capabilities and willingness of beneficiaries to take charge and determine the nature of the development affecting them. The distinctive feature of community management is the nature of decision-making

and the locus of responsibility for executing decisions. Community management consists of three basic components namely responsibility, authority and control. The principles built on the failures in upkeep and maintenance of community participation schemes in the 1990s, and supported intellectually by the 'last first' paradigm championed by Chambers (1998). Chambers stressed the importance of 'putting the last first' and highlighted the dangers of allowing outsiders with their characteristic 'biases' to drive the development process. Rather, he suggested a 'bottom-up' development model in which the subjects of development themselves defined their needs, priorities, and perfect development pathways (Chambers, 1998).

Schouten and Moriarty (2003) propose a key distinction between strategic decision about how a service is developed, and the "nuts and bolts" of day-to-day operation issues. They go on to say:

"We believe that community management is about communities making strategic decisions; what level of service they want, how they want to pay for it, where they want it. The community may also be involved in the day- to- day operation and maintenance, in collecting money from users and in buying spare parts, but they do not have to be. They may choose to hire a professional to do this for them; Community management is about power and control" (Schouten and Moriarty, 2003).

As observed by Davis and Garvey (1993) in a survey in the northern parts of Ghana on community management of water facilities, for effective community

management, there is the need for a clear understanding of community ownership and responsibilities.

In practice the concept of community management means different things to different people. There are however some common principles among the various schools of thought. These principles are;

- **Participation:** for effective community management to be in place, a cross section of the community participate in the development process, there must be broad community support for the implementation of CM models. Community participation must continue indefinitely.
- **Control:** the community must be in direct or indirect control over the operation and management of its own water supply system, where control is understood to mean the ability to make strategic decisions about the process, from the design phase to long term O&M.
- **Ownership:** although formal legal ownership of physical infrastructure is highly desirable, it may not always be possible in existing legal frameworks. Of equal importance is the perception of ownership by the user community.
- **Cost sharing:** closely linked to the question of ownership, is the need for some element of contribution to the recurrent costs of running and maintaining the system, depending on individual circumstances. contributions need not always be financial in nature.

## **Community water delivery in Ghana**

The delivery and management of drinking water in Ghana after independence was the responsibility of the then Ghana Water and Sewerage Corporation (GWSC), which traditionally concentrated on urban services. The top-down approach was used to deliver the water facilities to the rural people. The increasing operation and maintenance cost coupled with dwindling donor support necessitated the introduction of tariffs for water users. The system though brought limited community participation in the management and use of their water facilities, was faced with a number of challenges. This necessitated the launch of the National Community Water and Sanitation Programme (NCWSP) in 1994 in line with the Government's decentralisation policy. The objectives of the NCWSP are to provide basic safe drinking water and improved sanitation services to communities that would contribute towards capital cost and pay full operation and maintenance and repair costs of their facilities; ensure sustainability of the facilities through community ownership and management and other strategies; maximise health benefits by integrating water, sanitation and hygiene promotion interventions (CWSA, 1998).

An Act of Parliament, Act 564 in December 1998, established the Community Water and Sanitation Agency (CWSA) with the mandate to implement the NCWSP. At the national and regional level, the CWSA facilitates the planning, mobilizing and managing investments as well as supervising implementation of programmes and projects. The CWSA plays a facilitative role and serves as a reference point for all rural and small town water projects. The

CWSA provides the necessary framework and guidance to all stakeholders in rural water delivery and defines the methodology including the development of training manuals as well as management support ( CWSA Act , 1998, Act 564).

Local government is expected to play the role of an enabler by providing institutional support to the community based organisations (CBOs) and also provide regulations for the operation of the private sector. They have been entrusted with the responsibility of legal ownership of community water supply infrastructure. Under the Local Government Act 1993 (Act 462), the District Assemblies are coordinate the implementation of all projects. At the Assembly level, Municipal and District Water and Sanitation Teams (MDWSTs) are established to coordinate planning efforts, supervise community level capacity building as well as supervise and monitor the construction of facilities and the performance of existing water and sanitation facilities and systems. A senior officer designated as Schedule Officer for Water and Sanitation is appointed to oversee the work of the MDWSTs and to deal with higher policy level issues in water supply.

At the community level, Water and Sanitation Development Boards (WSDBs) in the case of small towns water systems; Water and Sanitation (WATASNs) Committees also called Pump Management Committees (PMCs) in the Upper East and West Regions; Pump Caretakers and Area Mechanics for point source water facilities complete the grassroots groups for community involvement. Akari (2004), however observed that WATSAN Committees know their roles in theory but the practice is not efficient due to lack of records on



activities in connection with pump management as well as general poor site cleanliness of pump sites. WATSAN Committees still expressed satisfaction with pump performance as long as the water flows even in situations where the pump body is damaged (shaking and perforated T-handle and almost falling apart). Table 1 shows the decentralization of functions for water delivery from national to the community level.

**Table 1: Decentralised functions of water delivery**

| National      | Regional          | MMDAs             | Community      |
|---------------|-------------------|-------------------|----------------|
| Policy        | Resource support  | Planning          | Implementation |
| Legislation   | Capacity building | Implementation    | Management     |
| Co-ordination | Monitoring        | Management        | Monitoring     |
| Guidelines    |                   | Capacity building |                |
| Strategies    |                   | Technical support |                |
| Monitoring    |                   | Monitoring        |                |

Source: IRC, 1998

The structure for rural water delivery places management functions of completed facilities on beneficiary communities. Though this is in line with government decentralisation policy, the capacity of the rural folk to ensure the sustainability of facilities is a big challenge. The structure has not considered the role of the grass root political structures such as the Unit Committees, the Zonal, Area and Town Councils in the management of the water facilities.

### **Institutional capacity for water delivery**

Wikipedia, the online encyclopaedia, defines institutions as structures and mechanisms of social order and cooperation governing the behaviour of a set of individuals. Institutions are identified with a set of social purpose and performance, transcending individual cooperative behaviour. Institutions' provide structure, guidelines for behaviour and shape human interaction. Institutional arrangements for rural water services can involve a number of stakeholders and the number and nature of partners will depend on the local context.

A number of factors influence the institutional capacity of water delivery and subsequently the performance of community management. Among these are the social homogeneity of the water users; skills and knowledge of user groups; operational rules of water users; coordination with government and the legal recognition of water user groups.

The effectiveness of community management of water systems depends to a large extent on the knowledge and skills of the water user groups to operate and maintain the system. Sara and Katz (1998) show quantitatively that training of household members and water committees in system operation and maintenance improves system sustainability by building capacity and commitment. People in rural communities often do not recognise that the water they consume causes some of their diseases. Educating water users about the health benefits of safe water handling, good hygiene practices and protection of water sources may affect how people value their water source and increase their willingness to maintain the

system. Sara and Katz (1998) established that the provision of hygiene education is positively associated with the willingness to maintain the system.

Operational rules that govern the operation, use and maintenance of a water system within a community influence the effectiveness of collective action by guiding interaction, among users. In particular, rules about decision-making, monitoring and sanctions are seen as critical for the effectiveness of community management. These rules, if properly implemented and enforced, provide households an incentive to participate in the design process, contribute the required inputs to construction, operation and maintenance of the system together with other community members.

Coordination of activities between government agencies and water user groups at community level is needed. Sara and Katz (1998) found that government agencies were often unresponsive to communities' needs and did not carry out their assigned tasks properly in six community-based rural water projects they studied. For any group to be effective, there is the need for it to be recognised as a legal entity..

In practice there is the need for all these institutions in water to work together at various levels in the provision, operation and maintenance of water facilities for rural communities. For instance, central government institutes mechanisms such as sector policy and legislation, clearly define roles and responsibilities of each institution, allocates budgetary support, sources external funding and devolves responsibility to local level for implementation. The intermediate level institutions that interact directly with the community in the

implementation, operation and maintenance as well as their overall management of the systems, generally receive limited attention during project design. This has become the "linchpin" between rural communities managing their own systems and national governments' with sound policies, which are far removed to provide the needed institutional support.

### **Community ownership and management (COM) under COWAP**

Under the COWAP, project staff facilitated in the formation of Pump Management Committees, the selection of Pump Caretakers and Area Mechanics at the community level for the management and maintenance of the facilities in the communities. District Water and Sanitation Teams were formed at the District level to monitor and provide support to these grass root groups. Private sector operatives were also identified to sell spare parts of the hand pumps at the District level. Each Assembly appointed Desk Officer of senior status to coordinate and monitor the activities of the District and grassroots operatives and report to Assembly periodically.

The management system of hand pumps provided by COWAP (1994) puts the community as owners and managers of the pump. Each hand pump serves a cluster of households within a catchment area. The households drinking from a particular hand pump constitute a hand pump community. The hand pump community is mandated with the following functions:

- Own the pump and is responsible for its operation, care, maintenance and repairs.

- Make decisions on how they want to manage the pump.
- Give power to a committee to make decisions and take actions on their behalf.
- Women to be represented on the committee and take part in decision making and action.
- The community cleans and maintains the pump site.
- The community works together to improve its use of pump water to get better health.

To perform these functions, the community constitutes a management committee consisting of between 7-9 members known as Pump Management Committee (PMC).

The Tasks of the PMCs (COWAP, 1994) are:

- Organise the work so that every member has a job to do.
- Organise meetings of the PMC and meetings with the whole community.
- Involve the community in caring for the pump and taking part in community water action.
- Liaise with outsiders for help.
- Make sure the pump is used properly and water and water collection is organised fairly so everyone gets water.
- Organise pump inspections, maintenance and repairs, and hire Area Mechanics when needed.
- Collect and manage money.

- Keep records of money collected and money spent and minutes of meetings.
- Clean and maintain the pump site through organising community self-help action.
- Work with the community to improve the use of pump water for better health.

### Summary

From the literature review, rural water delivery was characterised by a supply-driven approach, with the facilities centrally managed by government agencies. Emphasis was placed on technical solutions and not on community participation in the delivery or management. Overtime, the results were disappointing. There were high levels of pump breakdown and down time, donor fatigue in providing funds for maintenance leading to general consumer dissatisfaction. This led to a paradigm shift and the adoption of a new strategy on Community Ownership and Management (COM) of rural water supply facilities. The new strategy brought about policy reforms and the establishment of new structures for the delivery and management of rural water. Roles and responsibilities were assigned to institutions for delivery and management of facilities. While the central government is responsible for policy formulation, the CWSA defines the institutional arrangements for accelerating rural water delivery in a participatory and sustainable manner. Assemblies assume legal ownership of facilities and play a leadership role in the provision and management in line with

decentralisation policy. Non-Governmental Organisations (NGOs) and the private sector test new forms of delivery and capacity building and also supply goods and services respectively.

The institutional capacity for both delivery and management of rural water supply over the decades from the literature review points to a high degree of improvement. However, further assessment on the institutional arrangement and capacity of the community level structures is required for necessary improvement to ensure effectiveness in operation and maintenance for sustainability of the water facilities. Most researchers agree that the concept of community participation holds the key to the sustainability of facilities provided. This is strongly supported by Sara and Katz (1998). Davis and Garvey (1993) however pointed out that for effective COM; there is the need for clear understanding of community ownership and responsibilities. Akari (2004) pointed out that water and sanitation (WATSAN) Committees know their roles in theory but are not practically efficient in performance.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **Introduction**

This chapter gives a brief of the study area, the general principles behind the research and the criteria and processes used for collection and interpretation of the data and information.

#### **The study area**

This section describes the physical and socio-economic aspect of the study area which have direct bearing on the availability of water both underground and surface. This is necessary because the implementation of any project and the extent of its success to a large extent depends upon the contextual environment of the area. As observed by Kendie (2002), the meaning of anything “depends upon the linkages with the context of which it is a part”. This necessitated a comprehensive description of the study area.

#### **Location**

The Builsa District lies between longitudes  $10^{\circ} 05'W$  to  $10^{\circ} 30'W$  and latitudes  $10^{\circ} 15'N$  and  $10^{\circ}50'N$ . It is bounded to the north by Kassena Nankana west and to the south by West Mamprusi; to the east by Kassena Nankana East



and to the west by Sissala East. The District has a land area of 2,220sq.kms. This constitutes about 25.1 percent of the total land area of the Upper East Region.

### **Climate**

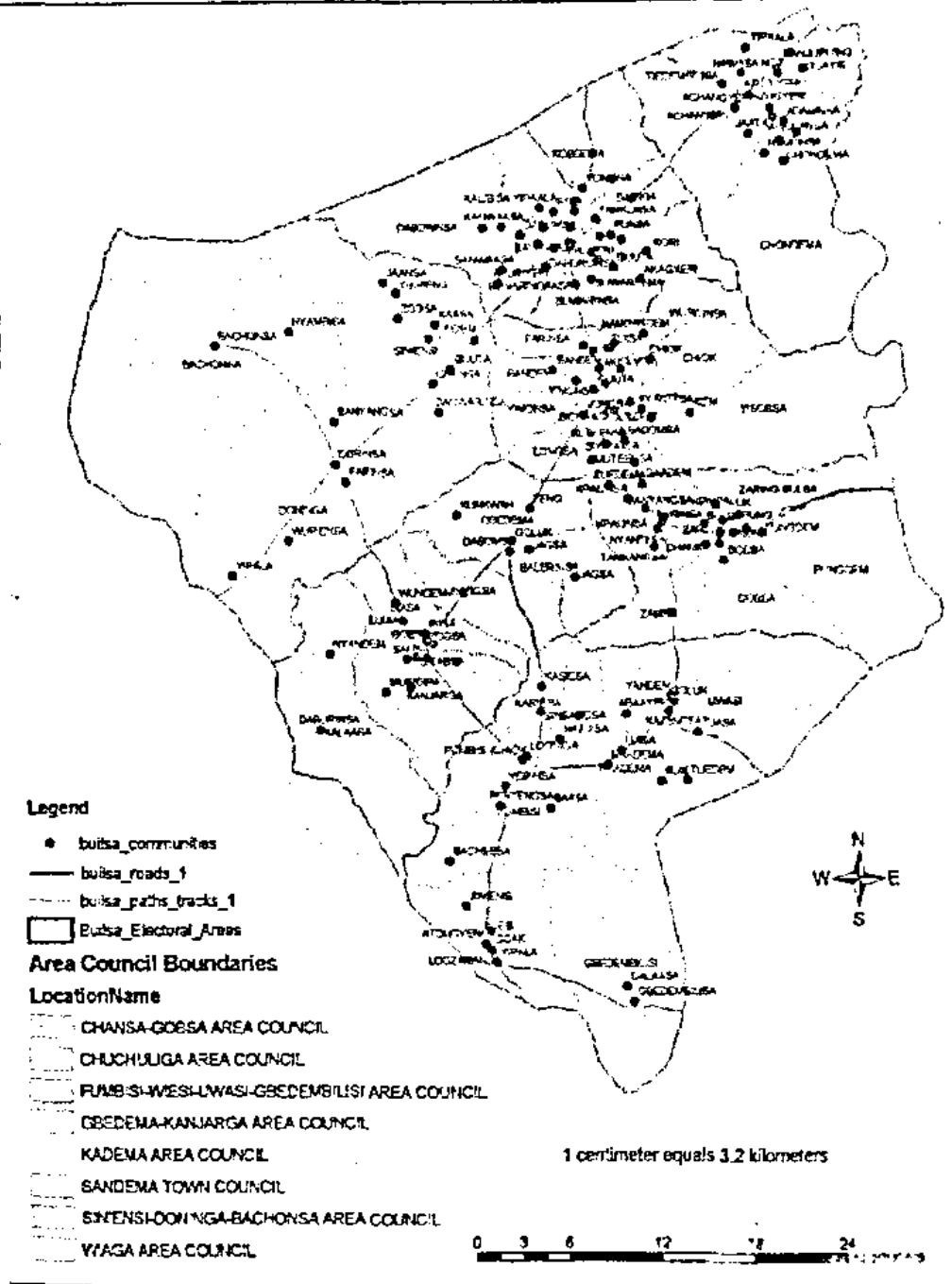
The district has tropical savannah climate with mean monthly temperature ranging between 21° C and 34.1° C and a single rainfall regime which starts in April and builds up to peak in August –September and stops in mid-October. The District effectively has five months of rains and seven months of dry season. Like most parts of the Upper East Region, the District is a water deficient zone whereby rainfall is inadequate for rain fed agriculture. The average rainfall ranges between 85mm and 1150mm per annum.

### **Drainage**

Like most parts of Northern Ghana, a significant portion of the District falls within the Volta basin and is heavily dissected by a number of important tributaries of the White Volta such as the Sissili, Tono, Asebelika, Belipieni, giving a very high drainage density. Most of these streams are however seasonal and dry up during the extended dry season with an adverse effect on the supply of water for both agricultural and domestic use.

The high drainage density coupled with the low-lying terrain reduces the level of accessibility in the District. Between July and September in particular, most rivers and streams overflow their banks flooding some roads, tracks and foot paths making some communities cut off from others.

# Map of Builsa District



**Figure 2: Map of Builsa District**

Source: Builsa Medium Term Development Plan, 2006

## **Vegetation**

The vegetation of the District is characterised by savannah woodland and consists mostly of deciduous, widely spaced fire and drought resistant, trees of varying sizes and density with dispersed perennial grasses and associated herbs. In the dry season, bush fires annually decimate the grasses and shrubs and as a result, pastures for livestock are largely destroyed. These bush fires also ravage the forest reserves in the District and render them hardly distinguishable from the surrounding vegetation.

## **Soils**

The soils of Builsa District are developed from five different geological formations namely granite, birimian rocks, voltain shale, alluvium of mixed origin and very old river terraces. Out of these, the dominant soil groups in the District are of granite origin and they cover over 70 percent of the District land area. They form the predominant soils in the northern half of the District and more than half of the southern section. Majority of these soils can be used for agriculture.

The second largest groups of soils are those derived from alluvia of mixed origin and those on very old river terraces. These soils cover approximately 19% of the District and are the best agricultural soils. With good water control measures and effective soil management practices, these alluvial soils can be cultivated to a very wide range of crops. They are also highly suitable for both hand and mechanized cultivation.

The soils developed from birimian rocks and voltaian shale form the smallest groups in the District. The soils of birimian rock origin and voltaian shale each cover about 5.0 percent of the District land area. Irrespective of the geographical formation, all the soils are generally low in fertility, especially in nitrogen, phosphorous and organic matter. Intense erosion overtime has contributed to serious reduction in soil depth and thereby to loss of arable surface.

By far, however, the soils of the District are the most important of its natural resource potential. Managed well, most of the soils are suitable for the cultivation of a wide range of Savannah grain and tree crops such as millet, maize, sorghum, guinea-corn, rice, groundnuts, cotton, soya beans, dawadawa, sheanuts and root crops like potatoes. The well-known Fumbisi valley consists of a vast tract of land that stretches from southern Fumbisi and Uwasi to Wiese and Gbedembilsi at the confluence of the Sissili and Kulpawn rivers. This zone has mostly alluvia soils very suitable for mechanised farming and cultivation of a wide range of crops especially rice due to the seasonal flooding in the areas.

### **Demography**

According to the 2000 Population and Housing Census, the Builsa District has a population of 75,375 constituting 8.2 percent of the region's population. With a population growth rate of 1 percent, the projected population for 2010 is about 81,652. The total population consists of 51.8 percent females and 48.2 percent males. The District is the most sparsely populated in the region and entirely rural. The total illiteracy rate is 79.85 percent. of these 83.4 percent are

female and 75.5 percent are male (Ghana, 2000). While the female headed households of the Upper East Region is 22.2 percent that of the Builsa District is 26.2 percent. However, 94.2 percent of females are temporary heads of households in the Builsa District. This is mostly attributed to migration of men to the south to undertake temporary jobs.

The economically active population (15 to 60 years) of the District is 72.4 percent with about 72.2 percent of this population into agriculture. The dependency ratio of the District is estimated at 51.1: 48.5 or 1:0.94 (Builsa, MTDP 2006-2009). The implication is that every economically active person in the District takes care of himself and about 94 percent of the needs of one other person. However, considering the fact that several people in the productive age group may be unemployed or under employed, the real dependency ratio of the District could be higher. Nine out of every ten people in the District could be described as poor. The high poverty incidence in the district manifest itself in several aspects of the social lives of the people and has resulted in the high rate of migration especially of the youth of ages between 15-45 (Builsa, MTDP 2006-2009).

Polygamy is common. Both men and women participate in subsistence activities, with labour and responsibilities organised along distinct gender lines. Men are primarily responsible for production (farming and rearing of animals) while women's primary responsibility is for family care (household management, the preparation of food and childcare). Women are also the primary collectors,

managers and users of water and make the decisions about sources of collection, quantities collected, storage and use.

### **Settlement morphology**

The district has 155 communities all of which are rural with population of less than 5000 people. Most of the communities have dispersed settlement patterns with ill-defined central areas (Builsa, MTDP, 2006-2009). The largely rural and dispersed settlement pattern increases the unit cost of investment for the provision of most basic social infrastructure like electricity and water.

### **Access to health**

The development of any society cannot be separated from the health of its inhabitants. This is because good health enhances the productive capacity of the people and their ability to judiciously exploit all potential resources. Access to adequate and essential health facilities and services therefore play a significant part in the socioeconomic development of the District.

The District has one Government Hospital at Sandema, five Health Centres located at Siniensi, Fumbisi, Kanjarga, Doninga and Chuchuliga; and two Community Clinics at Wiaga and Sandema. In addition to these facilities, mobile health teams from Sandema and other static Health Centres visit several villages/communities on routine bases to offer limited health services.

### **Access to education**

The District has 72 Primary Schools, 26 Junior High Schools and 4 Senior High Schools. There are however only some few private Kindergartens located in the District capital. Infrastructural development in the District can generally be described as fair. Girl enrolment at the primary level is greater than boys. The situation however changes at the junior high and senior high levels where the drop out rate of girls increases. The major problems facing the educational sector in the District are low budgetary support for supervision and monitoring, and the concentration of trained teachers in the District capital to the disadvantage of the rural areas.

### **Access to water**

The availability and accessibility of adequate quantities of potable water is important for the development of the Builsa District. Without adequate and cheap water supply, the health of the people will suffer and industrial and other commercial development will be retarded. The District has 17 Dams and Dug-outs (Builsa, MTDP, 2006-2009). These dams serve as sources of drinking water for a wide range of livestock and in some cases for dry season gardening as well. The district has a nominal coverage of 70 percent for drinking water (Builsa, MTDP 2006-2009). In spite of the seemingly high nominal coverage, the actual supply of water by distance is inadequate. This is due to the sparse settlement pattern. In some cases, supply is limited to sections of the communities such that the other people resort to unsafe water sources.

### **Energy supply**

Electricity constitutes only a small fraction of energy source for lighting, cooking and industrial activities within the District. Presently only five main settlements namely Sandema, Chuchuliga, Wiaga, Siniensi and Fumbisi enjoy electricity from the National Grid. The common source of energy for cooking is firewood and charcoal. Kerosene and gas are sparingly used for cooking in homes. This implies domestic source of energy is biomass based with the result that the forest resources continue to be depleted.

### **The study design**

The research is a descriptive cross-sectional case study. It used scientific research methods emphasising on exploration rather than prediction, and offered an opportunity to look for creativity and innovation.

### **Study population**

The main objective of the study was to assess the institutional structures, their capacity and effectiveness in the ownership and management of the hand pumps fitted by COWAP in the study area for ensuring the sustainability of the water point facilities. Given the approach adopted and the type of data required, the study population consists of hand pump communities, households, pump management committees (PMCs), pump caretakers (PCs), area mechanics (AMs) and District water and Sanitation Team (DWST) and the desk officer for water and sanitation at the District Assembly.



## **Sampling**

The sampling design was carefully chosen in line with the parameters of the study population and how to get the respondents among the target population. The people of rural Builsa are predominantly homogeneous in terms of socio-cultural and economic characteristics. As such the sample size of the target population of each unit relevant to the study objectives was carefully chosen. The major concerns of the approach were addressed through triangulations in data collection, coupled with strict supervision and monitoring.

The study depended on a multi stage approach and employed different sampling methods. Both the probability and non-probability sampling procedure were used to select the pump communities and the respondents. There are a total of 194 COWAP hand pump communities distributed all over the Builsa District and these served as the study population. The Builsa District was purposively chosen for the study because the Researcher is a native of that District and was born there and as such understands the social and cultural norms of the people. These made the District an obvious choice for the case study.

The next stage was the selection of hand pump communities and households. For the purpose of having a geographical distribution of the study communities, the 8 area and town councils of the district in which the hand pumps are distributed served as the population from which the study sample was selected. Three out of the 8 were selected using the simple random sampling technique. Numbers were assigned to each council. These numbers were written on pieces of paper and put into an empty container and mixed. A field assistant

picked numbers representing the councils. These councils formed the sample frame from which the hand pump communities were selected.

The selection of hand pump communities was next. A list of all hand pump communities within the three selected Town and Area Councils totalling 112 was compiled as the sampling frame. A one third ratio was applied in the selection of sub-samples from the sample frame. A total of 54 hand pumps were sampled in proportion to the number of hand pump communities in each council for the survey. One hundred and forty households were randomly chosen in proportion to the number of hand pump communities in each council and administered with interview schedules. Both men and women from households were interviewed. The purpose for the household interviews was to bring out the perceptions, connections and relationships households hold on the concept of community ownership, operation and management of the water facilities. Table 2 shows the samples.

**Table 2: Sub-samples of study populations**

| Town/area council | Total no. of HPCs | HPCs sampled | Households sampled |
|-------------------|-------------------|--------------|--------------------|
| Sandema           | 56                | 24           | 80                 |
| Wiaga             | 41                | 18           | 60                 |
| Chuchuliga        | 15                | 12           | 40                 |
| Total             | 112               | 54           | 140                |

Source: Field survey, 2010

One hundred and eight PMC members ( chairperson and secretaries) and 54 Pump Caretakers were interviewed. In-depth interviews were conducted on the two members of the DWST and the only AM who also doubles as the spare parts dealer in the District. Also, all the 54 pump sites selected were visited and assessed. The visits were conducted in the company of key informants within the community. The purpose was to assess the condition of the hand pumps, the concrete pad, gutter and trough as well as the general hygienic condition of the site. The information gathered helped to crosscheck information obtained from the interviews and the focus groups discussions.

Three FGDs with men, women and youth groups were held. The groups' membership was between 6-12 people. The purpose of the FGD primarily was to identify group norms about COM. It allowed for the collection of more information on a range of norms and opinions because people express different views and feelings on specific issues on COM during the discussions. Group dynamics also stimulated conversation, generated ideas, and reactions and thus clarified issues of importance to the study.

#### **Data collection instruments**

Both qualitative and quantitative methods of data collection were used to gather data and information at three broad levels: community perception on community ownership and management of the water facilities; institutional arrangement and capacity at both the district and community levels and the effectiveness of the management in the sustainability of the water facilities.

Approaches employed for the study included questionnaire administration, focus group discussions, in-depth interviews, transect walk and direct observations.

Whilst the transect walks and observations offered an opportunity for the assessment and collection of data on the current status of the water points (the hand pumps and their surroundings), the Questionnaire administration, In-depth Interviews and FGDs provided data and information at both community and District level on perceptions of COM, the existence of management structures, their capacity and effectiveness. Partial analysis of data was conducted alongside data collection and this allowed for the revision of strategies and the development of new tools.

#### **Pre-testing of data collection instruments**

A two- day orientation was conducted for the field officers recruited. Areas covered included the relevance of the study, the content of the questionnaire, interview and focus group guides and how to organise and administer both the interview and focus group schedules including the recording of responses. Day two was used to pre-test the data collection tools. This was to ensure the reliability of the instruments for data collection so as to increase the validity of the study. The exercise was done in communities different from the study communities. Problems identified on the data collection instruments were corrected and strategies designed to address likely field challenges.

### Primary data collection

Individual in-depth interviews (III), FGDs and accompanied walks to some hand pump sites were approaches used to gather information to complement data collected from questionnaire administration and also to clarify issues. The III offered an opportunity for individuals to give a vivid picture of their perspectives and experiences on COM of their water point facilities. The approach brought out the connections and relationships people see between the ownership, operation and management of the water facilities and their belief about COM of the facilities. The technique was most appropriate for the data collection since majority of the rural people in the study area are illiterate. The III approach also offered an opportunity for the Researchers to probe into any contradictory information given by the interviewees.

The FGDs were used primarily to identify cultural norms about COM as well as to discover variety within the population of the study area. The approach allowed for the collection of more information on a range of norms and opinions on COM because people express different views and feelings on specific issues during group discussions. Group dynamics also stimulated conversation, generated ideas, and reactions and thus clarified issues of importance to the study. The FGDs also gave a serious thought on the water issue and provided an insight into real life situation on the ground.

### **Secondary data collection methods**

To complement primary data, contacts were made to Builsa District Assembly for information from reports of the DWST about the operation and maintenance of the water facilities. Also information from reports of previous studies, books and publications on community management of water facilities were gotten.

### **Data processing and analysis**

The questionnaires administered were first checked to ensure that all questions had responses. The responses were then coded and entered into the SPSS computer software by a data entry clerk. The entered data was cross-checked by the Researcher and anomalies corrected. The data was then processed and analysed using the SPSS computer software. The findings are presented using descriptive statistics including frequencies and percentiles.

For the qualitative data, themes and sub-themes in line with the research questions and objectives were generated. Data (content) in the form of field notes FGDs, In-depth Interviews, and Transcripts were put under the themes and sub-themes and coded and analyzed. This information helped clarify the views and perceptions of community members with regards to the issues under investigation.

### **Problems of data collection and solutions**

The Researcher was hard pressed with time due to heavy work load at his office. He was granted leave in July, 2010. As such the data was collected during

the month of July and August, 2010. This period however coincides with the period of heavy rains in the Upper East Region. As such some planned field activities were sometimes disrupted due to rains and had to be rescheduled. Also some of the field officers found it difficult to locate some of the sampled hand pumps in certain communities partly due to the fact that the pump identification numbers written on the concrete pads had been destroyed. The absence of some PMC members and the total collapse of others compelled the selection of other pump communities to replace them. The concept of Volunteer Managers of some hand pump as a stop gap measure for the absence of PMCs further complicated the work of the interviewers. Despite all these challenges, the researcher and the field officers found solutions for the study to be carried out.

## **CHAPTER FOUR**

### **RESULTS AND DISCUSSION**

#### **Introduction**

This chapter presents the findings and discussions of the results. It starts with a presentation on the background of the respondents. Area covered include sex, marital status and education. These variables have implications on the perception of respondents on the management of the water facilities of the water facilities. The second part presents the findings in line with the study objectives.

#### **Background characteristics of household respondents**

The ages of the household respondents are as shown in Table 3. The age group of 45-49 representing (20%) constituted the largest proportion of household respondents. By gender, more females (59.3%) than males (40.7%) were interviewed. This was preferred because in the study area, water for drinking is considered women's business.

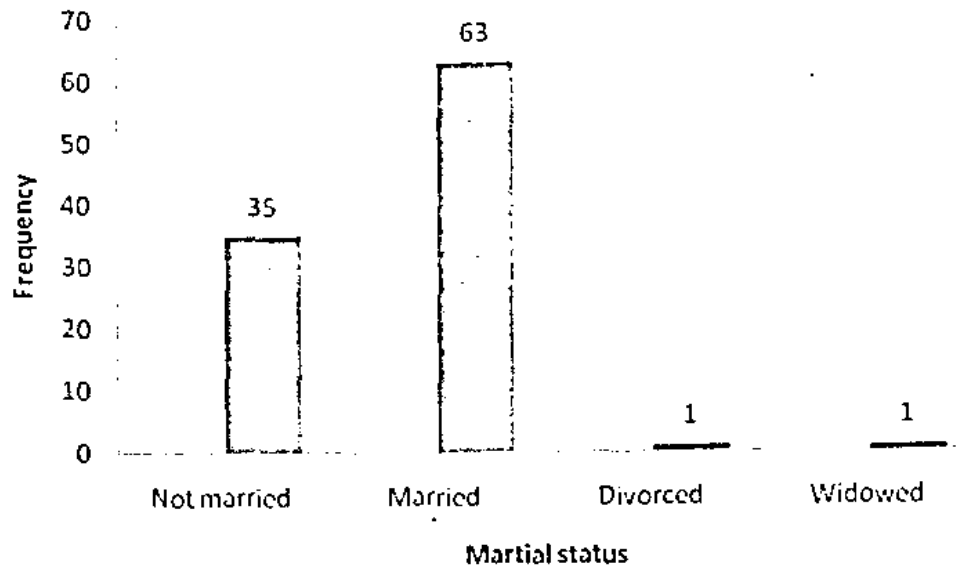


**Table 3: Age of household respondents**

| Age          | Frequency | Percentage |
|--------------|-----------|------------|
| 15-19        | 3         | 2.1        |
| 20-24        | 12        | 8.6        |
| 25-29        | 23        | 16.4       |
| 30-34        | 9         | 6.4        |
| 35-39        | 12        | 8.6        |
| 40-44        | 17        | 12.1       |
| 45-49        | 28        | 20.0       |
| 50-54        | 22        | 15.7       |
| 55-59        | 8         | 5.7        |
| 60 and above | 7         | 5.0        |
| Total        | 140       | 100.0      |

Source: Field survey, 2010

Married persons constituted the largest respondents (63%) with only 1.0 percent of respondents being divorced and widowed as shown Figure 3. Even though a higher proportion of respondents had formal education, only 14.8 percent of them had education up to tertiary level (Table 4). Marital status constitute social capital and likely economic base for productivity in the rural setting. Similarly, formal education and more especially to the tertiary level opens up opportunity for productive employment with higher income. These two factors directly have an influence on peoples understanding of the concept of community ownership and management of the water facilities.



**Figure 3: Marital status of household respondents**

Source: Field survey, 2010

#### Gender and educational characteristics of households

The level of education of households has influence on the understanding of the ownership of the water facilities and their role in the management. The findings of the survey on gender and educational attainment are as shown in Table 4.

As shown in Table 4, majority of household respondents (59.3%) received formal education. Even though more women than men obtained secondary education, the reverse is true at the tertiary level. This is characteristic of the study area where girls drop out from school early to marry.

**Table 4: Gender and educational attainment of households**

| Gender | Educational attainment |      |           |      |          |      |       |      | Total |      |
|--------|------------------------|------|-----------|------|----------|------|-------|------|-------|------|
|        | Basic                  |      | Secondary |      | Tertiary |      | None  |      | Freq. | %    |
|        | Freq.                  | %    | Freq.     | %    | Freq.    | %    | Freq. | %    |       |      |
| Male   | 17                     | 29.8 | 18        | 31.8 | 5        | 8.8  | 17    | 29.8 | 57    | 40.7 |
| Female | 23                     | 27.1 | 28        | 33.7 | 5        | 6.0  | 27    | 32.5 | 83    | 59.3 |
| Total  | 47                     | 56.9 | 46        | 65.5 | 10       | 14.8 | 44    | 62.3 | 140   | 96.7 |

Source: Field survey, 2010

#### Background characteristics of Pump Management Committee executives

The executives of the PMCs are responsible for the operation and management of the hand pump. Two executive members (chairperson and treasurer) of each PMC were interviewed. Their ages are presented in Table 5.

The greatest proportions of the executives are aged between 50-54 (27.8%). Only 1.8 percent of executives are aged between 15 -24. By far, a larger proportion of the executives are in the productive age group and may not have time for the PMC activities especially during the farming season as most inhabitants are into farming. Also, the infinite tenure of office of PMC members does not make room for the replacement of non- performing members. New entrants are by default due to their relationship with old PMC members who have either stopped the work, died, retired or travelled out of the community

**Table 5: Age of pump management committee executives**

| Age          | Frequency | Percentage |
|--------------|-----------|------------|
| 15-19        | 1         | 0.9        |
| 20-24        | 1         | 0.9        |
| 25-29        | 11        | 10.2       |
| 30-34        | 7         | 6.5        |
| 35-39        | 8         | 7.4        |
| 40-44        | 19        | 17.6       |
| 45-49        | 14        | 13.0       |
| 50-54        | 30        | 27.8       |
| 55-59        | 15        | 13.9       |
| 60 and above | 2         | 1.9        |
| Total        | 108       | 100.0      |

Source: Field survey, 2010

Gender and educational characteristic of Pump Management Committee executives

The responsibility of water for domestic purpose is generally considered “women’s business” in the study area. It is therefore important to ascertain the number of women in top management positions of the PMCs. Also, the educational status of PMC executives has implications on their performance. The results are presented in Table 6.

**Table 6: Gender and educational attainment of Pump Management Committee executives**

| Gender | Educational attainment |      |           |      |          |     |       |      | Total |       |
|--------|------------------------|------|-----------|------|----------|-----|-------|------|-------|-------|
|        | Basic                  |      | Secondary |      | Tertiary |     | None  |      | Freq. | %     |
|        | Freq.                  | %    | Freq.     | %    | Freq.    | %   | Freq. | %    |       |       |
| Male   | 33                     | 36.7 | 22        | 24.4 | 5        | 5.6 | 30    | 33.3 | 90    | 83.3  |
| Female | 7                      | 38.9 | 6         | 33.3 | 0        | 0   | 5     | 27.8 | 18    | 16.7  |
| Total  | 40                     | 75.6 | 28        | 57.7 | 5        | 5.6 | 35    | 61.1 | 108   | 100.0 |

Source: Field survey, 2010

Women occupy only 16.7 percent of key executive positions on the PMCs as shown in Table 6, despite the general feeling that drinking water is “women’s business”. Women generally refuse to take up higher positions in committees where men are among. Their general perception is that they support their husbands in community affairs. Majority of PMC executives indicated that they had some form of formal education. However, the level of attainment is low as only 5.6 percent attained tertiary education and these were all males. The low level of education directly affects the management capacity of the PMC members.

#### Background characteristics of pump caretakers

The pump caretakers are people selected by the community members from within the community to undertake periodic inspection, routine maintenance and repair of the hand pumps. Each pump community has two pump caretakers out of

which one was interviewed. Their ages which has implications on the time available for the work is as presented in Table 7.

**Table 7: Age of pump caretakers**

| Age   | Frequency | Percentage |
|-------|-----------|------------|
| 20-24 | 2         | 3.7        |
| 25-29 | 13        | 24.1       |
| 30-34 | 10        | 18.5       |
| 35-39 | 8         | 14.8       |
| 40-44 | 10        | 18.5       |
| 45-49 | 4         | 7.4        |
| 50-54 | 5         | 9.3        |
| 55-59 | 2         | 3.7        |
| Total | 54        | 100.0      |

Source: Field survey, 2010

Majority of Pump Caretakers are in the age groups 25-49. This falls within the economically active group. With about 72.2 percent of the economically active group into agriculture (Builsa, MTDP 2006-2009), they may not have time for the routine inspection of the hand pumps during the farming season.

#### Gender and educational characteristic of pump caretakers

Under the COWAP, each hand pump community had two pump caretakers with at least one of them as a female. This was to ensure that women gain

technical competence in the maintenance and repair of the hand pumps since the responsibility of drawing water rest on them. The gender and educational level of the pump caretakers are presented in Table 8.

**Table 8: Gender and educational attainment of pump caretakers**

| Gender | Educational attainment |      |           |      |          |     |       |      | Total |       |
|--------|------------------------|------|-----------|------|----------|-----|-------|------|-------|-------|
|        | Basic                  |      | Secondary |      | Tertiary |     | None  |      | Freq. | %     |
|        | Freq.                  | %    | Freq.     | %    | Freq.    | %   | Freq. | %    |       |       |
| Male   | 15                     | 34.9 | 8         | 17.4 | 1        | 2.2 | 22    | 47.8 | 46    | 85.2  |
| Female | 4                      | 50   | 1         | 12.5 | 0        | 0   | 3     | 37.5 | 8     | 14.8  |
| Total  | 19                     | 84.9 | 9         | 29.9 | 1        | 2.2 | 25    | 85.3 | 54    | 100.0 |

Source: Field survey, 2010

The study showed that only 8 (14.8%) out of the 54 pump caretakers interviewed were females. A greater proportion of male caretakers (47.8 %) never had any formal education. By gender, the female caretakers obtained more formal education than their male counterparts. The status of formal education by caretakers is generally low as only 1 out of 54 Caretakers (1.9%) attained tertiary status.

#### **Perceptions on community ownership and management**

Under the COWAP (1993-2000), the ownership, operation and maintenance of the water facilities fitted with hand pumps were transferred to the

beneficiary communities. Table 9 shows the awareness of households on the ownership of the water facilities.

**Table 9: Perception on ownership of water point facility**

| Ownership         | Frequency | Percentage |
|-------------------|-----------|------------|
| Community         | 134       | 95.7       |
| District Assembly | 4         | 2.9        |
| Don't know        | 2         | 1.4        |
| Total             | 140       | 100.0      |

Source: Field survey of households, 2010

As shown in Table 9, only 1.4 percent of households interviewed did not know who owned the hand pumps. Another 2.9 percent said the facility belonged to the District Assembly while the remaining respondents (95.7%) said the hand pumps are owned by the community. All the executives of the PMCs and the Pump Caretakers responded that the hand pumps are owned by the communities. Thus it is clear that community members have strong understanding of the ownership of the water facilities.

#### Management of hand pumps

The management, operation and maintenance of the hand pumps are necessary for the sustained supply of potable water to beneficiary communities. As such, the researcher wanted to know from households who manage the hand



pumps and how the management group was formed. The results are shown in Table 10.

**Table 10: Management of hand pumps**

| Who manages hand pump     | Frequency | Percent |
|---------------------------|-----------|---------|
| Pump management committee | 138       | 98.6    |
| Volunteers                | 2         | 1.4     |
| Total                     | 140       | 100.0   |

Source: Field survey, 2010

As indicated in Table 10, only 1.4 percent could not tell who manages their hand pump. Majority of respondents (98.6%) responded that a group called the PMC was responsible. Reasons assigned for the formation of PMCs by respondents include: to manage the hand pump, collect money for pump repairs, and organize community meetings to discuss issues about the hand pumps. The concept of volunteer managers of the hand pumps arose as a stop gap measure by some leaders within communities to fill vacuums created due to the non-functioning of some PMCs.

#### How pump management committees were formed

Household were interviewed to find out how the PMCs were formed. The results are as shown in Table 11.

**Table 11: Pump management committee formation**

| How formed                         | Frequency | Percent |
|------------------------------------|-----------|---------|
| Elected by the Community           | 118       | 84.3    |
| Appointed by the District Assembly | 14        | 9.5     |
| Don't know                         | 8         | 6.2     |
| Total                              | 140       | 100.0   |

Source: Field survey 2010

As shown in Table 11, majority of PMCs (84.3%) were elected by the community members. Although this seems to show some high level of communities' understanding of the concept of COM, it was revealed during the focus group discussions (FGD) that there was lack of commitment by community members to cooperate with the PMCs. Meetings organized by PMCs to discuss problems about the hand pump are poorly patronized. As remarked by a participant during a FGD, "even if they beg me to be a member of this group, I will refuse. How can I continue to be going to people's houses calling them to come for meetings anytime our pump has a problem as if they do not drink water from the pump". This remark summarises the frustrations and challenges faced by PMCs in the execution of their functions even though they were elected by their communities to manage the hand pumps.

The picture does show a clear understanding of the concept of COM by community members. These findings agree with Davis and Garvey (1993) who pointed out that for effective COM, there is the need for a clear understanding of community ownership and responsibilities. It also confirms the disagreement by

Harvey and Reed (2003) that there is no automatic relationship between the perception of ownership and responsibility for management and ownership and operation for sustainability.

### **Institutional arrangements and capacity for the management of the hand pumps**

The institutional structure and capacities refer to the staffing and capacities of the District Assembly; the District Water and Sanitation Team (DWST), the PMCs, Pump caretakers and Area Mechanics for the implementation of COM. The structure for COM is next discussed as a prelude to considering the capacities of these institutions to manage the water facilities.

#### **District Assembly level**

At the District Assembly level, a desk officer of senior status heads the water and sanitation sector as the schedule officer. The schedule officer is responsible for the implementation, monitoring and coordination of all water and sanitation activities in the district and reports to the administration at management meetings. He/she liaises with the District planning and Coordinating Unit (DPCU) to ensure that water and sanitation issues are featured in the overall district plans and budgets.

The District Water and Sanitation Team (DWST) consist of a three member members drawn from line departments of the District Assembly with expertise in technical, community development and sanitation and hygiene issues.

The functions of the DWST are: collecting data on water and sanitation for planning; monitoring the implementation of water and sanitation programmes and projects; monitoring the activities of PMCs, Area Mechanics and the functioning of the hand pumps; submitting reports on water and sanitation to the water and sanitation desk officer monthly, quarterly and annually and participating in meetings on water and sanitation on behalf of the Assembly (CWSA, 2003).

#### Community level

At the community level are the PMCs, the pump caretakers and the Area Mechanics. A PMC consists of between 7-9 persons elected from within the community by the community members to manage their hand pump. The executives consist of a chairperson, secretary, and treasurer. Other members are an organising secretary, hygiene educator and two pump caretakers. The functions of the PMCs are: organising community meetings on matters affecting their hand pump; facilitating the implementation of decisions taken; collecting and managing money collected for hand pump maintenance and repairs; keeping records of all activities and transactions and report periodically at community meetings and work with the community to improve the use of water for better health. The pump caretakers ensure routine inspection of the hand pump; undertake routine maintenance and repair breakdowns.

Also, to minimise downtime of hand pumps, some people are trained as Area Mechanics to acquire higher knowledge and technical skills on the hand pumps in order to give backup to the pump caretakers.

Community members as owners and beneficiaries of the water facilities have a critical role to play in the operation, maintenance and management of the hand pumps. The functions of the community are: electing a group (PMC) to manage the hand pump; attending pump community meetings; contributing tariff for the maintenance and repair of hand pump and motivating the PMCs.

### **Capacity to manage the water facilities**

This section examines the capacity of the various structures to manage the water facilities. Sustainable delivery of water depends on the logistics and resources (human, financial) available.

#### **Capacity of the District Assembly**

At the top management level of the Assembly, the Deputy Coordinating Director is the schedule officer for water and sanitation. A discussion with him revealed that the performance of the water and sanitation sector is unsatisfactory. Reasons assigned for this include; the lack of a full complement of a three member DWST, lack of monthly work plans for water and sanitation activities, and inadequate resources from the central government to complement donor and NGO support in the sector.

The findings also revealed that only two out of the three members of the DWST are at work. Of the two, only one is active while the other is suffering from ill-health. The active DWST member is also the District Engineer. There is therefore little time for this active member to carry out DWST activities. The

support required in terms of monitoring of the operation and management of the facilities by the Pump management Committees, Caretakers and Area Mechanics is inadequate.

#### Capacity of Pump Management Committee executives

The stability and functioning of the PMCs is critical to the sustainability of the hand pumps for the provision of potable water to communities. The study showed that 12 out of 54 (22.2%) of hand pump communities surveyed had their PMCs not functioning. Volunteers from four of these communities are managing the affairs of the hand pumps. Table 12 shows dropout in membership of the PMCs.

**Table 12: Stability of pump management committees**

| Dropouts in membership of PMC | Frequency | Percentage |
|-------------------------------|-----------|------------|
| Yes                           | 55        | 50.9       |
| No                            | 53        | 49.1       |
| Total                         | 108       | 100.0      |

Source: Field survey, 2010

There were dropouts in the membership of nearly 51 percent of PMCs. Reasons attributed for the turnover of some PMC members include; fatigue, seasonal outmigration, deaths, incapacitation and voluntary resignation and general frustration due to the uncooperative attitude of community members. The infinite tenure of office of PMC members, coupled with the lack of support with

the simple reason that they are also members of the community and as such also benefit from the water, was a great de-motivator for PMC members. Generally, most of the PMCs are inactive. These findings agree with findings presented at a Software Forum of the Community Water and Sanitation Agency in 2007 in Cape Coast by the Eastern Region that 48 percent of WATSAN Committees (known as PMCs in the study region) were not functioning. As recommended by Gariba (1995) in a study on community management on water point sources in Northern Ghana, community management capacity, once established, should not be personalized in any one set of individuals.

#### Training of pump management committee executives

The educational status of an individual enhances ability to perform. Further training for specific tasks improves knowledge and skills and builds confidence for improved effectiveness and efficiency in performance. It is for this reason that the researcher sought to assess the training received by the PMC executives.

**Table 13: Training of pump management committees**

| Trained | Frequency | Percentage |
|---------|-----------|------------|
| Yes     | 76        | 70.4       |
| No      | 32        | 29.6       |
| Total   | 108       | 100.0      |

Source: Field survey, 2010

As shown in Table 13, majority of PMC executives (70.4%) had received training under the Community Water Project (COWAP) instituted in 1993-2000. The areas of training are in management, tariff collection, record keeping, hand pump maintenance and repairs, pump site sanitation and hygiene. Only 29.6 percent of PMC executives indicated that they did not receive any training at all. Respondents indicated that they had not received any training or refresher courses after the end of COWAP in 2000. The reason is that there were no funds for further capacity building of the grassroots management groups.

#### Training of pump caretakers

When equipped with the requisite knowledge and skills, pump caretakers ensure that the pump is functioning at all times for community members to get potable water. This is achieved by ensuring that all hand pump breakdowns are immediately repaired.

**Table 14: Training of pump caretakers**

| Trained | Frequency | Percentage |
|---------|-----------|------------|
| Yes     | 38        | 70.4       |
| No      | 16        | 26.9       |
| Total   | 54        | 100.0      |

Source: Field survey, 2010

As shown in Table 14, 70.4 percent of caretakers received trainings under COWAP. The trainings were in pump maintenance and repairs, record



keeping and pump site sanitation and hygiene. The respondents indicated that since 2000 when COWAP ended, they have not received any training or refresher courses. The situation has negative implications on the downtime and the sustainability of the hand pumps. As observed by Rondinelli (1991), community management fails when user groups lack the capacity for maintenance and repairs.

#### Training of area mechanics

Area Mechanics give backup support to Pump Caretakers on repairs for which the latter can not handle. Implied in this is that their knowledge and skills in hand pump maintenance and repairs should be higher than the pump caretakers. The only Area Mechanic in the study area has benefitted from both on the job and formal training under COWAP. The trainings received are in the areas of pump maintenance and repairs and record keeping. He also participated in several advanced and refresher courses after COWAP with the last in November, 2009 on solar pump installation on boreholes.

#### Tariff contribution

Under COM, communities are to pay tariffs for the purchase of spare parts for the maintenance and repair of the hand pumps and the development of the pump site. The amounts to be paid are decided by the community. Failure to contribute tariffs has negative implications for the functioning of the pumps such as the non-availability of money to buy spare parts for repair anytime the hand

pump breaks down. It is for this reason that households were interviewed about tariff payment. The results are shown in Table 15.

**Table 15: Tariff contributions**

| Pay tariff | Frequency | Percentage |
|------------|-----------|------------|
| Yes        | 120       | 85.7       |
| No         | 20        | 14.3       |
| Total      | 140       | 100.0      |

Source: Field survey, 2010

As shown in Table 15, 85.7 percent of household respondents indicated that they pay tariff annually. The amount paid per household ranged from GH¢1- GH¢10 with only 2.9 percent of households paying the highest amount of between GH¢ 6-GH¢10 annually as shown in Table 16. Majority of respondents indicated that the amount paid is not fixed. Households are levied based on the amount needed for the repairs of the hand pump any time it breaks down. Thus, the range of payment by households merely indicates monies paid for repairs rather than regular tariff contributions.

**Table 16: Amount paid per household annually**

| Amount              | Frequency | Percentage |
|---------------------|-----------|------------|
| Between Gh¢1- Gh¢5  | 57        | 40.7       |
| Between Gh¢6- Gh¢10 | 4         | 2.9        |
| Not fixed           | 79        | 56.4       |
| Total               | 140       | 100.0      |

Source: Field survey, 2010

## Tariff management

Tariffs collected are deposited in a bank and withdrawn for the maintenance and repair of the hand pump as well as the development of the pump site. The PMC executives are to render periodic statements of expenditure at community meetings. Table 17 shows how tariffs are kept after collection by the PMC executives.

A greater proportion of tariffs collected is kept with the PMC treasurers (41.1%) and the chairpersons (21.4%) respectively. Only 25 percent of household respondents indicated that tariffs collected are deposited at a bank. It was revealed during the FGDs that most people do not know how the tariffs are used. Some participants alleged that the PMC executives were spending the tariffs and hence their refusal to pay regular tariffs.

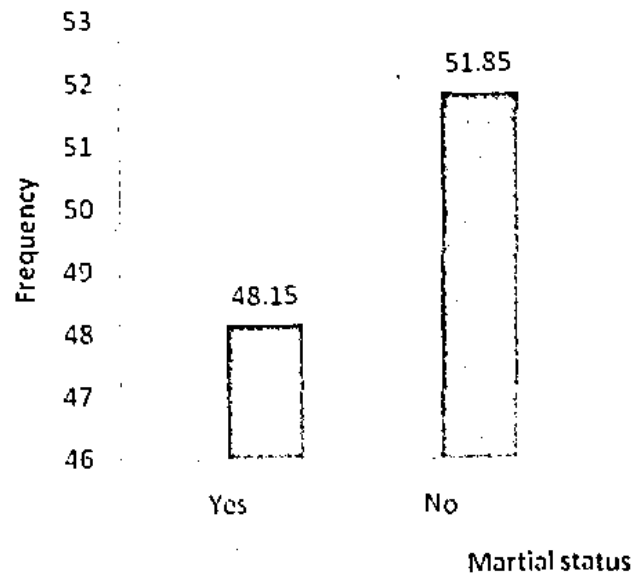
**Table 17: Where tariff collected is deposited**

| Place            | Frequency | Percentage |
|------------------|-----------|------------|
| At bank          | 35        | 25.0       |
| With chairperson | 30        | 21.4       |
| With treasurer   | 58        | 41.4       |
| Don't know       | 17        | 12.1       |
| Total            | 140       | 100.0      |

Source: Field survey, 2010

### Availability of hand pump parts for repairs

The availability of hand pumps spare parts has great implications for the downtime and sustainability of the hand pumps. It is for this reason that the study sought to find out from the Pump Caretakers the availability of hand pump spare parts.



**Figure 4: Availability of hand pump spare parts**

Source: Field survey, 2010

As indicated in Figure 4, 51.85 percent of respondents indicated that hand pump spare parts are not available in the Bulsa District. The parts are either purchased from Navrongo in the Kassena Nankana East District or Bolgatanga the regional capital at distances of 25km and 50km respectively. A discussion with the Area Mechanic explained that the lack of capital to purchase in bulk and stock was a key factor.

### Effectiveness of pump management committee executives

When functioning well, the PMC executives are to ensure that the hand pumps are in good condition to provide water. They are also to organise the communities to ensure cleanliness of the pump site. These functions (hand pump operation and site cleanliness) provide excellent indicators to measure the effectiveness of the PMC executives. The next section used these proxy indicators to assess the performance of the pump management committees.

### Physical conditions of hand pumps and pump sites

As shown in Table 18, majority of the hand pumps (98.1%) were functioning at the time of the study visit. The condition of pump sites were generally unsatisfactory.

**Table 18: Physical conditions of hand pumps and pump sites**

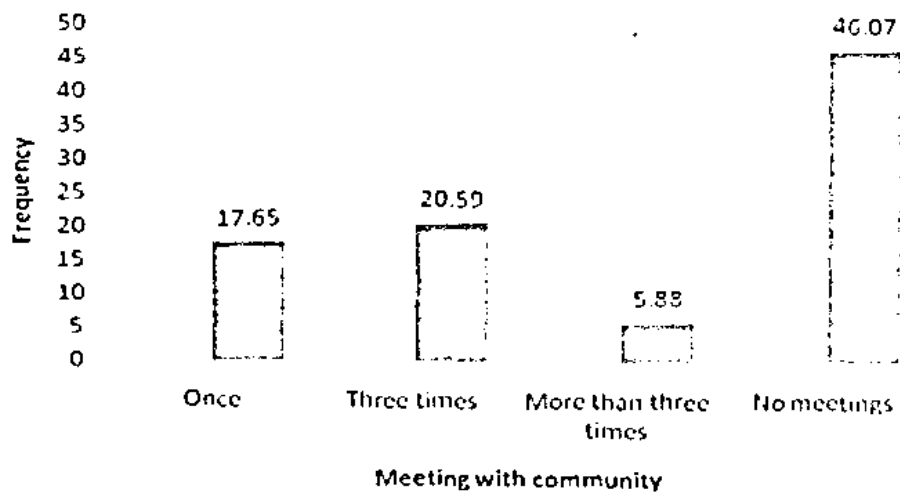
| Condition                       | Yes   |      | No    |      | Total |       |
|---------------------------------|-------|------|-------|------|-------|-------|
|                                 | Freq. | %    | Freq. | %    | Freq. | %     |
| Hand pump functioning           | 53    | 98.1 | 1     | 1.9  | 54    | 100.0 |
| Knots and bolts well tightened  | 43    | 79.6 | 11    | 20.4 | 54    | 100.0 |
| Pump Handle in good shape       | 44    | 81.5 | 10    | 18.5 | 54    | 100.0 |
| Pump site clean                 | 25    | 46.3 | 29    | 53.7 | 54    | 100.0 |
| Concrete site in good condition | 39    | 72.2 | 15    | 27.8 | 54    | 100.0 |
| Gutter in good condition        | 21    | 38.9 | 33    | 61.1 | 54    | 100.0 |
| Is there a trough               | 43    | 79.6 | 11    | 20.4 | 54    | 100.0 |
| Troughs in good condition       | 24    | 44.4 | 30    | 55.6 | 54    | 100.0 |
| Pump site backfilled            | 30    | 55.6 | 24    | 44.5 | 54    | 100.0 |

Source: Field survey, 2010

About 61 percent of gutters and 55.6 percent of troughs were not in good condition. During the FGDs, it came to light that pump site cleanliness and development are not seen as issues once water flows from the hand pump. This clearly shows that the connection between hygiene and potable water is not well understood by most community members.

#### Pump management committees meetings with community

An informed community is necessary for effective community management. Meetings provide a forum for community members to discuss issues and problems affecting their hand pumps and take collective decisions to solve them. Meetings are therefore important and serve as a proxy indicator for the measurement of the effectiveness of PMCs. It is for this reason that PMCs were asked about the number of times they held meetings with community members in the last twelve months. The results are as shown in Figure 5.



**Figure 5: Meetings held with community in last 12 months**

Source: Field survey, 2010

A significant percentage of pump communities (46.1%) never held any meeting during the last twelve months while only 5.9 percent of respondents said that they held more than three meetings. It was revealed during the FGDs that community members attend meetings organised by the PMC executives only when the hand pump breaks down and they find it difficult to get drinking water.

#### Decisions implemented in the last 12 months

Decisions implemented from community meetings are very important in measuring the effectiveness of the management committees. Attempts were therefore made to ascertain the implementation of decisions taken within the past twelve months. The results are as depicted in Table 19.

**Table 19: Decisions implemented in the last 12 months**

| Number of decisions | Frequency | Percent |
|---------------------|-----------|---------|
| One                 | 61        | 56.5    |
| Two                 | 25        | 23.2    |
| More than two       | 18        | 16.7    |
| None                | 4         | 3.7     |
| Total               | 108       | 100.0   |

Source: Field survey, 2010

As shown in Table 19, only 16.7 percent of PMC executives responded that more than two decisions were implemented in the last 12 months. The decisions implemented by PMCs are that of tariff collection, hand pump repairs

and the cleaning of pump sites. As previously discussed, the main challenge to inadequate decision taking on hand pump issues and subsequently implementation borders on the refusal of community members to attend meetings.

#### Downtime of hand pumps

The downtime is the length of time it takes to fix a hand pump that has broken down. The downtime is a function of the availability of pump spare parts, money to purchase them and the capacity of the Pump Caretakers and Area Mechanics to repair the broken down pump. The downtime of the hand pumps surveyed is as shown in Table 20.

**Table 20: Downtime of hand pumps**

| Downtime                       | Frequency | Percent |
|--------------------------------|-----------|---------|
| Less than a week               | 25        | 46.3    |
| Up to two weeks                | 14        | 25.9    |
| Above two weeks                | 12        | 22.2    |
| Not applicable ( No breakdown) | 3         | 5.6     |
| Total                          | 54        | 100.0   |

Source: Field survey, 2010

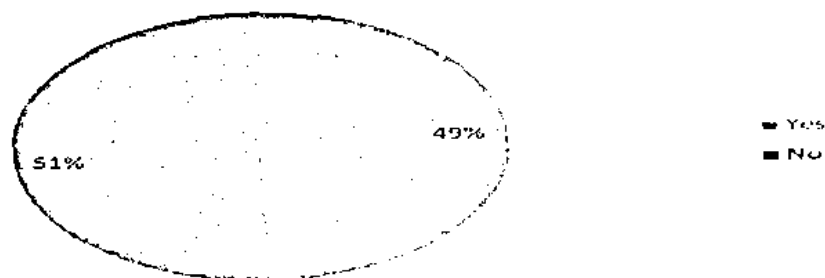
As shown in Table 20, only 3 (or 5.6%) of the communities indicated that they never experience any breakdown since the installation of their hand pumps. Discussions with the Area Mechanic revealed that most of the Pump Caretakers are not at post. Those at post do not undertake routine maintenance of the hand



pumps. This has often led to major breakdown of pumps beyond the capacity of the Pump Caretakers. Reports of breakdown to the Area Mechanic are also not prompt for immediate attention. The non-availability of money even after reports are made, faults detected and the costs estimated is another cause for the long downtime. The situation is worst when it falls within the lean season of the year when household poverty levels are more pronounced. Thus the prolonged downtime of hand pumps may compel some community members to resort to drinking water from unwholesome sources such as dams, streams and rivers exposing them to water borne diseases.

#### Conflicts between PMCs and communities

Disagreements leading to conflicts are normal occurrences in life once people live together. The resolution of conflicts is however important in the building of cohesive communities for development. It is for this reason that the researcher sought to ascertain whether there are conflicts between the PMC executives and the communities and how they are resolved. The findings are as shown in Figure 6.



**Figure 6: Conflicts between PMCs and community members**

Source: Field survey, 2010

As indicated in Figure 6. 49 percent (33) of PMC executives interviewed indicated that they have ever had conflicts with their community members. Most of the conflicts centred on community members refusal to pay tariffs, accusations from some community members that PMCs were spending their monies, refusal by PMCs for some households to fetch water from the hand pump due to tariff non-payment and the refusal by some community members to participate in pump site development and cleaning.

Most of the conflicts are either resolved by the PMCs themselves or left to die a natural death with time. Though it was revealed during the FGDs that there are formal agreements as to how community members should co-operate with PMCs for the smooth management of their hand pumps. These agreements are not enforceable. For instance, it was revealed during the FGDs that the sanctions agreed for refusal to pay levies for hand pump repairs is for the defaulting households not to be allowed to fetch water from the hand pump. This agreement has become difficult to enforce. Attempts to enforce it have been the root cause of most conflicts between the PMCs and some community members. A participant lamented during a FGD as follows; "what pains me most is the refusal of our leaders to take action against those who refuse to pay monies for the repairs of the hand pump anytime it breaks down but are still allowed to fetch water after we have contributed money for it to be repaired". This statement summarizes the frustration some well meaning community members go through.

### Satisfaction with community ownership and management arrangements

The satisfaction of service delivery by beneficiaries and managers of the hand pumps is an indicator to the satisfaction of the COM concept. Table 21 show the satisfaction by the various categories of stakeholders.

**Table 21: Satisfaction with service delivery**

| Respondents     | Yes   |      | No    |      | Total |       |
|-----------------|-------|------|-------|------|-------|-------|
|                 | Freq. | %    | Freq. | %    | Freq  | %     |
| Households      | 99    | 70.7 | 41    | 29.3 | 140   | 46.3  |
| PMC executives  | 73    | 67.6 | 35    | 32.4 | 108   | 35.8  |
| Pump caretakers | 40    | 74.1 | 14    | 25.9 | 54    | 17.9  |
| Total           | 212   |      | 90    |      | 302   | 100.0 |

Source: Field survey, 2010

As indicated in Table 21, satisfaction with the service delivery was very high for all categories of stakeholders. The pump caretakers expressed the highest satisfaction (74.1%), followed by the households (70.7%) and the PMCs (67.6%). The challenges and frustrations the PMC executives face in the management of the hand pumps accounts for their highest dissatisfaction (32.4%) in the service delivery. The respondents who were not satisfied with the service delivery gave their reasons as; the lack of transparency in tariff management by the PMCs, poor and uncooperative attitude of some community members towards the PMCs, long downtime of hand pumps and unsanitary sites of hand pumps.

## CHAPTER FIVE

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### Introduction

The study assessed the perception of community members about the concept of COM, the management structures and their capacities at the community and District Assembly level for the ownership and management of boreholes fitted with hand pumps by the COWAP for rural communities in the Builsa District. This chapter summarizes the major findings in line with the study objectives and the literature review, draws conclusions and make recommendations.

#### Summary of key findings

1. The largest age group of household respondents was between 45-49 with women being 59.3 percent.
2. Only 13.5 percent of household respondents had tertiary education.
3. The largest group of PMC executives (27.7%) aged between 50-54.
4. Only 16.7 percent of PMC executives positions are occupied by women.
5. Although majority of PMC executives had formal education (67.6%), only 3.8 percent reached tertiary level.

6. Majority of household respondents (95.7%) and all PMCs new that the boreholes fitted with hand pumps belong to the community.
7. Ninety percent of households indicated that the PMCs were formed by the community through elections.
8. There is however lack of support and commitment by community members to cooperate with the PMCs for the smooth discharge of their duties.
9. The institutional structures for the operation and maintenance of the hand pumps at both the community and District Assembly level exist.
10. The structures are however weak both in terms of numbers and capacity to work effectively.
11. More than half (50.9%) of all PMCs interviewed had experienced dropout in membership and in most cases without replacement.
12. More than half of household respondents (56.4%) indicated that tariffs are not fixed. Rather, every household is levied anytime a hand pump breaks down and the cost of repairs is estimated.
13. Most households refuse to pay tariff due to lack of transparency in fund management by pump management committee executives.
14. The only Area Mechanic has the capacity to handle major hand pump repairs.
15. There is no full complement of a three member DWST for operations at the Builsa District Assembly.

16. There is no work plan for water and sanitation. The implementation of water and sanitation activities are adhoc and in response to reports and request from communities and other stakeholders in the sector. implementation. at the District Assembly.
17. Majority of the hand pumps (98.4%) were functioning as at the time of the study.
18. The sanitary conditions of 53.7 percent of pump sites visited were poor.
19. Community members understanding of the connection between good sanitation and potable water is weak as 71 percent of households and 63 percent of PMC executives indicate that they are satisfied with the sanitary conditions of their pump sites.
20. Pump management committees hardly call for meetings.
21. Only 16.5 percent of household respondents indicated that the PMC executives had implemented more than two decisions in last twelve months prior to the study.
22. The downtime of hand pumps is very high as 53.7 percent of pump caretakers indicated that it takes up to a week or more to repair a breakdown hand pump.
23. Majority of all categories of respondents in the study indicated that they are satisfied with the service delivery under the COM concept.

## **Conclusions**

The study revealed that community members understand that the boreholes fitted with hand pumps under the COWAP belong to the community. The institutional structures at the both the Community and District Assembly level are weak in terms of numbers and capacity to ensure the smooth implementation of COM and the sustainability of the hand pumps and hence the point source water facilities. The effectiveness and efficiency of service delivery by all stakeholders at both the community and District Assembly levels is very weak.

## **Recommendations**

Based on the findings of the study, the following recommendations are made:

### **The District Assembly**

- The Builsa District Assembly should ensure that the DWST is reconstituted and trained in monitoring, data collection and management, information communication technology (ICT) and report writing.
- The District Assembly should ensure that annual water and sanitation plans are drawn and adequate resources made available for implementation. The Desk Officer for water and sanitation should ensure that resources are provided for the DWST work. The Desk officer should demand for monthly reports from the DWST on the activities undertaken.

- The District Assembly should ensure that refresher courses are organised for PMC executives in financial management, organising meetings, record keeping and conflict management. This will enhance their performance in the management of the water facilities.
- The District Assembly should formulate a bye-law on the operations and tenure of office of PMCs. This would guide in their operations and make them more accountable to their communities. It will also ensure that non-performing PMC members are dropped and new members elected to replace them. With time, a wealth of human resource in water management will be available in communities to support existing PMCs.

#### The DWST

- The DWST should intensify monitoring activities of PMCs, Caretakers, Area Mechanics and also physically inspect hand pumps' performance and pump sites. Monthly work plans should be submitted to the Water and Sanitation Scheduled Officer for approval and release of resources for implementation.
- The DWST should ensure that all non-functioning PMCs are reactivated or new ones reconstituted. This should be done through the sensitization of the affected communities on the need for functional PMCs to manage their hand pumps.



### The PMCs

- The PMCs should liaise with other community leaders to ensure that pump meetings are well organised.
- The PMCs should ensure that tariffs collected and not immediately used are lodged in a bank to avoid suspicion of fraud by community members. Statement of expenditure clearly indicating funds received, used and balances should be made known to community members at meetings.

### The Community

- Community members should ensure that they attend meetings organised by the PMCs to discuss issues about their hand pumps and take collective decisions for the operation, maintenance and management of them.
- Community members should ensure that tariffs agreed by them are paid on time.
- The community should institute measures to motivate the PMCs who are voluntarily serving them.

## REFERENCES

- African Development Bank (1989). *Water supply and sanitation sector policy*. ADB Publications of Rural.
- Akari, P. (2004). *Sustainability of Water Supply facilities in Northern Ghana*. Bolgatanga: DISCAP.
- Bacho, F. Z. I. (2001). *Infrastructure delivery under poverty. Potable water provision through collective action on Northern Ghana*.
- Black, M. (1998). *Linking what works: UNDP/World Bank Water and Sanitation Programme*. Washington D.C.: World Bank.
- Boateng, J. D. (2007). *Assessing the sustainability of community participation in community water supply projects in the Asante Akim North District*, A dissertation presented to the Institute for Development Studies for the award of an MA Degree in Environmental Management and Policy.
- Builsa (2006). *District Medium Term Development Plan (2006-2009)*. Builsa District Assembly, Sandema.
- Chambers, R. (1998). *Community water supply management. History of community management*, accessed from [www2.irc.nl/manage/whatis/sit/history.html](http://www2.irc.nl/manage/whatis/sit/history.html). on 3/6/05.
- Community Water and Sanitation Agency (2007). *Software forum*. Central Region, Cape Coast.
- Community Water Project (1994). *Pump management committee manual*. Accra: COWAP.

- Davis, J. & Garvey, S. (1993). Developing and managing community water supplies, *Oxfam Development Guidelines*, Ireland: Oxford University Press.
- de Ferranti, B. (1988). *Water for rural communities: Helping people help themselves*, Washington D. C.: World Bank.
- Essaw, D. W. (2001). *Managing the maintenance of rural water supply systems in the Central Region of Ghana*, M.PHIL thesis submitted to the Institute for Development Studies, University of Cape Coast.
- Gariba, S. (1995). Institutional Organisation Consideration at the community level: In *Conference on Transition to Community Management*, Kumasi: GAP.
- Gershon, T. & Moigne, G. L. (1999). Managing water in sustainable manner: In *The Financial Post*, Accra: Post Publications Limited. March 29<sup>th</sup>-April 11, Accra: Post Publication limited.
- Ghana Statistical Service (2000). *2000 Population and Housing Census Enumerators Manual*, Accra: Ghana Statistical Service.
- Hopkins, R. & Richards, J. (1984). Dracunculiasis, Africa and the Water and Sanitation Decade: In Bourne, m(ed) *Water and Sanitation: Economic and Sociological Perspective*.
- Internal Water and Sanitation Centre (1998). *Community Management Model*. The Hague, The Netherlands: IRC.
- Kendie, S. B. (1992). Survey of water use behaviour in rural Northern Ghana, in *Natural Resource Forum*, 16(2), 126-131.

- Kendie, S. B. (1994). Willingness to pay more for rural drinking water services in Ghana and Togo, *Discussion Paper Series, No 3. Ghana*.
- Kendie, S. B. (1995). *Linking Water Supply, Sanitation and Hygiene in Northern Ghana*. Cape Coast : Catholic Mission Press.
- Kendie, S. B. (2002). *Water Supply, Sanitation and Hygiene Analysis of connecting factors in Northern Ghana: Technical Report*, C.D.S. University of Cape Coast.
- Khan, A. H. (1997). The Sanitation Gap; Development a Deadly Gap” in *Progress of Nations WHO; Water Supply and sanitation Collaborative Council and Unicef Representative*.
- Narayan-Parker, D. (1995). The contribution of People’s Participation: Evidence from 121 Rural Water Supply Projects. *Environmentally Sustainable Development Occasional Paper No 1*. Washington D.C. U.S.A. The World Bank.
- O’ Malley, K. (1989). “An action plan”, in *West Africa* 29<sup>th</sup> Aug., September 3rd
- Republic of Ghana (1993). *Local Government Act, 1993 (Act 462)* Accra, Ghana. Ghana Publishing Corporation.
- Republic of Ghana (1998). *Community Water and Sanitation Agency Act, 1998 (Act 564)* Accra, Ghana. Assembly Press.
- Republic of Ghana (2007). *National Water policy*. Ministry of water resources Works and Housing, Ghana.

Sara, J. & Katz, T. (1998). *Making rural water sustainable: Recommendations from a Global Study* UNDP- World Bank Water and Sanitation Programme. Washington D.C.: World Bank.

Schouten, T. & Moriarity, P. (2003). *Community water, community management: From system to service in rural area*. London: ITDG Publishing.

UNICEF (1999). Towards better programming. *A water handbook Technical Guidelines series No. 2*, Sadiq, Rasheed (ed); New York: UNICEF.

**APPENDICES**

**APPENDIX I**

**INTERVIEW SCHEDULE FOR COMMUNITY OWNERSHIP AND  
MANAGEMENT OF DRINKING WATER FACILITIES IN THE BUILSA  
DISTRICT OF THE UPPER EAST REGION OF GHANA**

**Introduction**

The purpose of the study is to assess the management arrangement and the capacity for the ownership and management of Boreholes fitted with hand pumps under COWAP in the Builsa District. Your participation is very necessary towards the success of this exercise. The information given will be treated as confidential. There is no wrong or right answer, so feel free to answer the questions.

Thank you in advance for

**Section A: Background information**

Town/Area Council:.....

Community:.....

Interviewer ID:.....

Date: .....

**Demographic data**

1. Age of Respondent

2. Sex

3. Marital Status

4. Education

5. If Formal Schooling Specify.

**Section B: Perception on community ownership and management**

6. Who owns your Borehole?

7. Explain your answer.

8. Who manages your Borehole?

9. Explain your answer.

10.If PMC, how was it formed?

11.Give reasons for forming the PMC

**Section C: Community involvement in the management of the hand pumps**

12.Do you give support to the PMC?

13.If yes, what type of support?

14. How many times has the PMC met the community in the last 12months/

15. How many decisions from meetings have been implemented within the last 12 months?

16. Do you contribute financially towards the management of your hand-pump?

17. If yes, how much do you pay in a year?

**Section D: Effectiveness of PMCs**

18. Who decides on how much to pay?

19. Where is money collected kept?

- 20.. What happens to those who refuse to pay?
21. What do you like about the payment system?
22. Has there been any disagreement between the PMC and the community?
23. If yes, what was the nature of the disagreement?
24. Who resolved it?
25. How many times has your H/P broken down in the last 12months?
26. How long does it normally take to repair a broken down hand pump?
27. Are hygiene and sanitations organized?
28. How often are these meetings organized?
- 29.. Who attends these meetings?
30. Are you satisfied with your pump site cleanliness
31. What other comments do you have about your water system in general?



## APPENDIX II

### INTERVIEW SCHEDULE FOR PUMP MANAGEMENT COMMITTEES

#### Section A: Background information

Town/Area Council:.....

Community:.....

Interviewee Position on PMC :..... Date: .. ..

#### Demographic data

1. Age of
2. Sex
3. Marital Status
4. Education
5. If Formal Schooling Specify

#### Section B: Institutional structure of the pump management committee

6. Who established the PMC?
- 7.. How old is the PMC
8. How many members are on the PMC?
9. List the positions on the PMC?
- 10.. How many females are on the PMC?
11. What positions are occupied by females?
12. How long does a member serve on the PMC?
13. Have there been changes on the membership of the PMC?

14. If yes, why?

**Section C: Capacity of the PMC**

15. Have members of the PMC been trained after its formation?

16. If yes, how many in the last three years?

17. Mention the type/areas of training{s}

**Section D: Effectiveness of PMCs**

18. How many times has the PMC met in the last twelve months?

19. How many times has the PMC held a community meeting in the last twelve months?

20. How many decisions have been implemented in the last 12months?

21. Do community members contribute towards the repair of the Hand Pump?

22. If yes, how much do each household pay in a year?

23. Who decides on how much to pay?

24. Where is money collected kept?

25. What happens to those who refuse to pay?

26. Has there been any disagreement between the PMC and the community?

27. If yes, what was the nature of the disagreement?

28. Who resolved the disagreement?

29. How long does it normally take to repair a breakdown?

30. Where do you normally get your spare parts?

31. Do you organize community meetings on water hygiene and sanitation? ?

32. How often are they organized?

33. Who attend these meetings?

34. Are you satisfied with your Pump site cleanliness?

35. What other comments do you have about your water facility in general.

**APPENDIX III**

**INTERVIEW SCHEDULE FOR PUMP CARETAKERS**

**Section A: Background information**

Town/Area Council:.....

Community:.....

Interviewer ID:.....

Date: .....

**Demographic Data**

1. Age of Respondent
2. Sex
3. Marital Status
4. Education
5. If Formal Schooling Specify

**Section B: Institutional structure and effectiveness**

6. How many Caretakers maintain the hand pump in your community?
7. Of these, how many are females?
8. How long have you been a Caretaker?

**Section C: Capacity of pump caretakers**

9. Have you been trained in the work you do as a caretaker/fitter?
10. If yes, what kind of trainings?( List them)

11. When was the last time you were trained?

**Section D: Effectiveness of pump caretakers**

12. How often do you inspect your pump?

13. What kind of maintenance/repair work do you normally perform on the hand pump?

14. Do you have the necessary tools for your work?

15. If no, why?

16. Are the pump spare parts readily available?

17. Do you have money available for spares and repairs?

18. How long does it normally take you to repair a break down?

19. Have you been without water due to pump breakdown in the past twelve months?

20. If yes. Why?

21. Where do get your spare parts to repair your hand pump any time it breaks down?

22. How are repairs you are unable to handle treated?

2.3. Do you receive any reward from the community for your work? 1

24. Do you keep records of your work?

## APPENDIX IV

### CHECK LIST FOR HAND PUMP SITE VISITS

Town/Area Council:

Community:

Borehole ID No :

Date:

1. Is the hand pump functioning?
2. Are the foundation bolts and nuts well tightened?.
3. Is the handle in good shape?
4. Is the pump site clean?
5. Is the concrete extended pad in good condition?
6. Is there a trough?
7. Is the trough in good condition?
8. Is the site backfilled?
9. General comments about the site.

## APPENDIX V

### FOCUS GROUP DISCUSSION GUIDE

For the compliance of the Interviewer/ Researcher

- Introduce yourself
- Outline the purpose of the FGD, and state the objectives
- Write down the demography and occupation of each participant. These should include the name, age, sex, education, marital status, religion and occupation.
- Outline how the discussions will be held
- Assure them that no answer is right or wrong
- Set the rules for the discussions
- Seek their permission to use a tape recorder to record the session (if one is available)
- Record answers by members to questions posed against their names
- Always ask if there is something more to add after having discussed each question.
- End each question by recapping some of the things discussed and the agreements and disagreements reached
- Thank the Group for their co-operation

#### Areas and questions for discussion

##### Section A: Concept of community ownership

1. Definition and meaning of ownership of something/link to COM
2. What things do you community own?

3. What shows that the community owns them?

4. In your opinion do you think that the community owns the Hand Pump in your community?

5. Give reasons.

**Section B: Institutional arrangement for hand pump management**

6. Does the community have a Pump Management Committee?

7. How was the Committee formed?

**Section C: Capacity of pump management committees**

8. How often does PMCs hold meetings with the community?

9. What are some of the decisions taken at meetings and implemented?

10. Does the Pump Management Committees manage your Hand Pump well?

(Give reasons for your answer).

9. What should be done to improve the performance of the PMCs..

10. What suggestions do you have to improve the community management of your water facilities?