

**An Assessment of Sustainability of Water and Sanitation Interventions in Northern
Region**

A case study of Nanumba North District

By

Sulaiman Issah-Bello, B.A.(Hons.)



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Certification

I, SULAIMAN ISSAH-BELLO, hereby declare that this submission is my own work towards the Commonwealth Executive Masters in Public Administration (CEMPA) and that, to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University, except where due acknowledgement has been made in the text.

KNUST

Sulaiman Issah-Bello

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.....

(PG 3103309)

Signature

Date

Certified by:

Ibrahim Osman

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.....

(Supervisor)

Signature

Date

Certified by:

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(Head of Department)

Signature

Date

Abstract

Since the start of the modern international development movement in the 1960s, development workers have recognized the need for appropriate technology and improved project planning to overcome the historically low success rates of water and sanitation projects (Feachem *et al.*, 1977; Cairncross, 1992; Pickford, 1995). Yet, within the water and sanitation sector, it is widely agreed that past project interventions have not done enough to improve the situation.

According to Coalition of NGOs in Water and Sanitation (CONIWAS), about 33% of water facilities are down at any one moment. The European Union (EU) also examined its STS's and discovered about 50% of EU funded water facilities were not functioning. These facts clearly demonstrate that the threat posed as a result of sustainability of these water facilities must be tackled, to ensure that they remain functional and useful to communities throughout the year. The MDG on water and sanitation, the SWAp compact and many other forms of interventions are geared towards provision of the facilities without being mindful of issues about sustainability. Hence, the desire to undertake this study. The study was much more of qualitative in nature with little quantitative data for analysis. Questionnaires were administered and focus group discussions were held. Besides, some of the facilities were observed and interviews conducted with some key stakeholders which altogether led to the conclusions drawn. The study revealed that lack of coordination among the stakeholders (NGOs) do not engender sustainability since the NGOs tend to operate with varied approaches some of which have the tendencies to cause an overlap in the mode of service delivery as well as throwing confusion among the beneficiaries. The aesthetic environment and socio-cultural values were not of significant threat to issues of sustainability of water and

sanitation intervention. Instead, economic conditions and technological consideration were the issues identified to strongly affect sustainability. Inappropriate tariff setting and lack of community involvement at every stage of project implementation also accounted for sustainability problems that the study area encountered. Based on these findings, it was recommended that the local government authority must create an enabling environment to harmonize the activities of the relevant key stakeholders in order to have well defined approached to water and sanitation intervention in the district. Also, the involvement of the beneficiaries is crucial and for that matter must be considered in every stage of the intervention. Besides, the choice of technology must be locally friendly to avoid difficulties in operation and maintenance of the facilities. Finally, appropriate tariff setting would have a long way to help guarantee the sustainability of the facilities.



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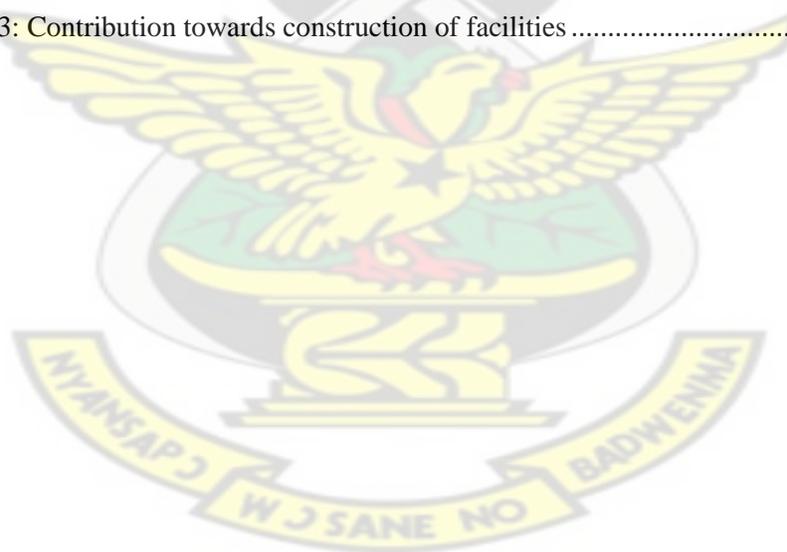
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List of Abbreviations

AGREDS	Assembly of God Relief and Development Services
BH	Borehole
CEMBA	Commonwealth Executive Masters in Business Administration
CEMPA	Commonwealth Executive Masters in Public Administration
CWSA	Community Watae and Sanitation Agency
CWSA	Community Water and Sanitation Agency
CWSD	Community Water and Sanitation Division
DAs	District Assemblies
DWST	District Water and Sanitation Team
EC	European Commission
GLAAS	Global Annual Assessment of Sanitation and Drinking Water
GoG	Government of Ghana
GWSC	Ghana Water and Sewerage Corporation
HDW	Hand Dug Well
I-WASH	Integrated Water and Sanitation and Hygiene
JMP	Joint Monitoring Programme

Km	Kilometer
KVIP	Kumasi Ventilated Improved Pit
l/c/d	Litres per consumption per day
LMS	Limited Mechanized System
MDGs	Millennium Development Goals
NCWSP	National Community Water and Sanitation Programme
NGOs	Non Governmental Organizations
NND	Nanumba North District
O&M	Operation and Maintenance
OECD	Organization for Economic Co-operation and Development
RWSP	Rural Water and Sanitation Project
SIP	Strategic Investment Programme
STPS	Small Town Pipe System
SWAp	Sector Wide Approach
UN	United Nations
UNICEF	United Nations Children's Fund
USD	United States Dollar

VIP	Ventilated Improved Pit
VLOM	Village Level Operation and Maintenance
WATSAN	Water and Sanitation
WHO	World Health Organization
WS&S	Water Supply and Sanitation



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CHAPTER ONE

GENERAL INTRODUCTION

1.1 Background of the study

This chapter contains the background of the study, problem statement, research objectives, research questions, scope of the study, significance of the study, limitations of the study and organization of the chapters.

One of the most significant measures to improve public health, spur economic development, and reduce poverty is universal access to and use of clean water and sanitation supplies. All efforts are geared towards not only ensuring that these facilities are in place but most importantly serving the people at all times. For nearly two decades, since the signing of United Nations (UN) Agenda 21 in 1992, the first formal, global commitment to sustainability, the world has struggled with how to integrate sustainability measures into development efforts, especially those of drinking water and sanitation. The large percentage of nonfunctioning wells and unused latrines is a stark marker of inadequate operation and maintenance and lack of sustainable services.

In developing countries, a significant number of projects, including those in the water and sanitation sector, fail to deliver benefits to society over the longer term. Part of the cause of this failure lies in poor understanding of the issues of impact and sustainability. (Carter et al., 1999). In a survey of 11 countries in Sub-Saharan Africa, the percentage of functioning water systems in rural areas ranged from 35–80% (Sutton, 2004). A study in South Africa

documented that as many as 70% of the boreholes in the Eastern Cape were not functional (Mackintosh and Colvin, 2003). In a survey of 7,000 wells and boreholes in Tanzania, on average, 45% were in operation, and only 10% of systems that were 25 years or older were still functioning (Haysom, 2006).

Sanitation schemes in disrepair have also been documented, such as in rural Ghana, where nearly 40% of latrines constructed through the assistance of a sanitation programme were unfinished or not utilized (Rodgers et al., 2007). What is urgently needed to stem the trend of disrepair and accelerate progress in achieving the United Nation's Millennium Development Goals (MDGs) is a coherent focus on sustainability. The MDGs, which aim to "halve from 1990 figures, the proportion without access to water and sanitation by 2015" UN (2000) have been important in galvanizing global attention and support for water and sanitation. However, efforts such as the MDGs, which focus on expansion of new services, run the risk of undermining the fundamental issues of sustainability by encouraging rapid construction of infrastructure rather than long-term, critically needed, investments in operation and maintenance.

Nevertheless, some of the questions that need to be answered are: for how long can the facilities be continuously provided; at what point should the issue of sustainable management plan for these facilities be considered; and who should be responsible for ensuring the sustainable use of the facilities? In the light of the above questions, this study is undertaken to assess the sustainability of water and sanitation interventions in Northern Region, a case study of Nanumba North District.

1.2 Problem Statement

Undoubtedly, access to potable water and safe sanitation is a pre-requisite for sustained human development significant of which have been recognized by the international community.

Notwithstanding the prominence given to the issue of water and sanitation interventions, many developing countries are faced with the problem of sustainability, especially in Ghana. The situation is even worse when reference is made to both urban and rural settings.

Water and sanitation accessibility and sustainability is a debilitating concern for the Nanumba North District. The District has a total number of two hundred and thirty (230) boreholes out of which fifty six (56) are non functioning. Of eighty eight (88) hand-dug wells in the district, thirty three (33) are at various states of disrepair (WATSAN Mapping, 2008). By the CWSA standard, basic service of water requires that people have access to a minimum of 20l/c/d of acceptable quality water from an improved source spending not more than 30 minutes per day. However, the District capital, Bimbilla, could not meet this minimum daily requirement as the people have to make do with about 12l/c/d which is below the basic service level. The situation on the part of sanitation is much more serious since about 95.3% of the people still practice open defecation (WATSAN Mapping, 2008). This figure includes people having access to toilet facilities but do not use them due to lack of maintenance. The people in Bimbilla, the District capital, could have access to about 6l/c/d of potable water before 2009. In 2009, the figure sharply rose to about 19l/c/d due to the intervention of EC/UNICEF sponsored I-WASH project that constructed 2no. limited mechanized schemes in the township. The figure, unfortunately, dropped to the present level

of about 12l/c/d due to some minor technical problems the systems developed in 2010. This could be attributed to lack of sustainability plan to guide in the O&M of the facilities.

This study therefore seeks to research into assessing the opportunity for participation by major stakeholders in the water and sanitation sector; the nature of interventions in terms of economic condition, socio-cultural feasibility, aesthetic and technical considerations; the sustainability provisions; and enhanced ways of ensuring sustainability of the facilities.

1.3 Research Objectives

The general and specific objectives of the study have been stated. They included;

1.3.1 General Objective

The general objective of the study is to assess the sustainability of the water and sanitation interventions in the Nanumba North.

1.3.2 Specific Objectives

The specific objectives are:

1. To determine the opportunity for participation by major stakeholders in the water and sanitation sector.
2. To assess the nature of interventions in terms of economic condition, socio-cultural feasibility, aesthetic and technical considerations.
3. To identify and assess the sustainability provisions.
4. To determine enhanced ways of ensuring sustainability of the facilities.

1.4 Research Questions

1. What are the opportunities for participation by major stakeholders in the sanitation and water sector?
2. What are the nature of interventions in terms of economic condition and technological consideration?
3. What are the relevant sustainability provisions available?
4. What are the relevant strategies to sustainable water and sanitation management?

1.5 Scope of the Study

The study is on the assessment of the sustainable management of water and sanitation facilities in the NND. Specifically, sanitation in terms of liquid waste disposal, its adequacy and sustainability is studied. This is because it is just not enough to provide these facilities but much more important to have the facilities in use in a sustainable manner.

The study is also considering a shift from traditional to modern ways of doing things in Nanumba North District.

1.6 Significance of the Study

The research would give me exposure to the practical realities, of the concept and principle and theories that have been learnt on the Masters in Public Administration. It would give me grasp of the situations and issues surrounding sanitation and water management. That would be giving an enhancement of my knowledge in research.

The research would also serve as a platform for further research in similar areas. It would also be significant to the works of the International Governmental Organizations and Non Governmental Organizations.

The research findings and recommendations would be useful to the policy makers and other stakeholders when formulating or reviewing policies on sustainable project management with particular reference to water and sanitation interventions in Ghana.

1.7 Limitations of the Study

Due to resource constraints in terms of the research materials coupled with cost to be incurred on the research assistants, the number of respondents had to be cut down. The broad nature of sanitation also made it difficult to cover all areas hence, liquid waste as an aspect of sanitation was only considered for this research which is being referred to as excreta disposal. Another limitation encountered was about the terrain of some parts of the study area that are not accessible even in the dry season. Despite these limitations, all efforts were made to assure the internal validity of the research.

1.8 Organization of the Chapters of Study

The study is organized into five chapters. Chapter one contains the Introduction that includes background of the study, problem statement, research objectives (general and specific objectives), research questions, scope of the study, significance of the study, limitations of the study and organization of the study. Chapter two comprises review of relevant literature on the topic that sought to examine the global, national and local perspectives of water and sanitation interventions. The third chapter contains methodology which describes the

demographic characteristics, determination of sample size, data gathering instruments and analytical tools. Chapter four contains data presentation and analysis whilst chapter five consists of summary of findings, conclusions and recommendations. Appendices are attached.

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CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The literature review looks at water supply and sanitation facilities from the global and local perspectives. The chapter gives account on usefulness of water and sanitation interventions, historical backgrounds, definitions and coverage, and issues of sustainability among others.

2.2 Global Perspective of Water Supply and Coverage

Water and sanitation have been the focus of international development at least since the 1970s. Despite regular global action, the situation is still wanting. According to the WHO (2010) Joint Monitoring Progress Report (JMP) on Water and Sanitation, global population uses improved drinking water sources, an increase in 10% point in 18 years. However, 884 million people still lack access to drinking water. While the water MDG may be realised, sanitation remains seriously off track with 2.6 billion people lacking access to improved sanitation. The world is likely to miss the MDG sanitation target by a billion people with sub-Saharan Africa seriously off track. It is thus amply clear that the challenge of providing safe water and improved sanitation in both urban and rural areas of developing countries persists since much has not been achieved since the early 1990s. Even where these facilities have been installed, they are still often inadequate, unsafe, and in various states of disrepair. Access to drinking water and to basic sanitation is measured by the MDG indicators, which focus on the proportion of population using an improved drinking-water source and the proportion of population using an improved sanitation facility.

Nearly 10% of the total burden of disease worldwide is attributable to unsafe water, sanitation, and hygiene, and the associated diseases claim 3.6 million lives annually (Pruss-Ustun et al., 2008). Access to improved water and sanitation is important because it is the foundation for healthy communities, and results in significant health, economic, and social gains (Bartram et al., 2005; Hutton et al., 2007; Montgomery and Elimelech, 2007). Realizing these gains, which have, in the least-developed countries, an estimated value of five USD for every dollar invested (Hutton et al., 2007), depends on reliable and sustained access to water and sanitation services.

At any one time, half the people in the developing world are suffering from diseases associated with inadequate water supply and sanitation services and more than half of hospital beds in the world are filled with people suffering from water related diseases (DFID, 2009). WHO data on the burden of disease shows that “approximately 3.1% of deaths (1.7 million) and 3.7% of disability-adjusted-life-years (DALYs) (54.2 million) worldwide are attributable to unsafe water, sanitation and hygiene.” In Africa and developing countries in South East Asia, 4% – 8% of all disease burdens are attributable to these factors. Over 99.8% of all the deaths attributable to these factors occur in developing countries and 90% are deaths of children (WHO, 2005). Since the effect associated with unsafe water or lack of it has been felt worldwide, there have been a number of policies and programme interventions at the global and local fronts to remedy the situation.

2.3 Water Supply in Ghana

This section looks at the water supply in Ghana by considering a brief historical background, definitions and coverage. The water subsector in Ghana like other countries has programmes

combined with that of sanitation and hygiene promotion. The Community Water and Sanitation Agency (CWSA), which is a government agency considers hygiene education as an important component of water and sanitation projects as it maximizes the potential benefits of improved water supply and sanitation facilities. The UN-Water Global Annual Assessment of Sanitation and Drinking-Water (GLAAS) report (UN, 2008) also indicated that sanitation and drinking-water sectors are usually combined in the same projects or programmes, and data are generally maintained to meet Organisation for Economic Co-operation and Development (OECD) guidelines (which require aggregated instead of disaggregated data reports for the two sectors).

2.3.1 Historical Background

Until 1994, water supply and sanitation in Ghana was heavily supply-driven with the central government in charge of delivery and managing infrastructure. A centralized para-statal institution- the Ghana Water and Sewerage Corporation (GWSC) was in charge of delivery, operation and maintenance of services –both in urban and rural areas since 1965. From 1965 to 1985 not much attention was paid to rural water supply. For instance, it was estimated that within this period only 28% of the rural population had access to improved water while urban coverage was over 60%. This led to the creation of the Rural Water Department within the GWSC in 1986 to focus more attention on the provision of water and sanitation to rural people. Some facilities were provided but these could not be sustained due to non-payment of tariffs by beneficiary communities resulting in little or no maintenance of the facilities by the Centralized Maintenance Units of GWSC. The United Nations General Assembly declared

the period 1981 – 1990 as the International Drinking Water and Sanitation Decade to ensure that nations made significant strides in the delivery of water and sanitation facilities to their populace. The Ghana Government, in line with the agenda for the decade initiated a review of its policies on water and sanitation provision to keep pace with the changing conditions in the country and on the international scene (CWSA, 2007). The National Community Water and Sanitation Programme (NCWSP) was launched in 1994 in line with the Government's decentralization policy. This culminated in the creation of the community Water and Sanitation Division (CWSD), a semi autonomous unit within the then GWSC to manage rural water and sanitation delivery. After four years of existence, it was deemed necessary to grant complete autonomy to the division to give greater impetus to its work. Subsequently, the Division was transformed into the Community Water and Sanitation Agency (CWSA) by an Act of Parliament, Act 564 in December 1998, with the mandate to facilitate the provision of safe drinking water and related sanitation services to rural communities and small towns in Ghana. The CWSA has since been facilitating the implementation of the NCWSP using the decentralized structures at the district and community levels as prescribed in the Act (CWSA, 2007).

The NCWSP in line with the decentralization policy places emphasis on the district/community active participation in the planning, implementation and management of safe water supply and improved sanitation services. The policy seeks to ensure sustainability of investment in water and sanitation by making beneficiary communities the primary focus. User communities are to be initiators, planners, implementers, managers and owners of the service (GoG, 2005).

2.3.2 Definitions

Joint Monitoring Programme (JMP) for Water Supply and Sanitation of WHO and UNICEF classifies water supply as “improved” and “unimproved” based on their definitions and to be classified as improved, the water supply must provide at least 20 litres per capita per day from a protected source within 1km of the user’s dwelling (Guy and Jamie, 2008b).

Table 2.3.2.1: Definitions of “improved” and “unimproved” water supply

Intervention	Improved	Unimproved
Water Supply	<ul style="list-style-type: none"> • Piped water into dwelling, plot or yard • Public tap/ standpipe • Tube well/ borehole • Protected dug well • Protected spring • Rainwater collection 	<ul style="list-style-type: none"> • Unprotected dug well • Unprotected spring • Cart with small tank/ drum • Tanker truck • Bottled water • Surface water (river, dam, lake, pond, stream, canal, irrigation channels)

Source: Guy and Jamie (2008b).

In Ghana, communities are classified into three categories of settlement types based on the CWSA guidelines as follows: rural, for a population of 75 – 2000; peri-urban (small town) for population of 2001 – 5000; and urban for population of 5000 and above (Unihydro Ltd, 2003a). According to Nyarko (2007), a small town is defined in the CWSA Act as “a community that is not rural but is a small urban community that has decided to manage its own water and sanitation systems”. The CWSA policy defines a small town water system as a piped system serving communities of between 2000 and 50000 inhabitants who are

prepared to manage their water supply systems in an efficient and sustainable manner (Nyarko, 2007). The CWSA has different water supply technological options considered as improved water supply for the population groups as indicated in Table 2.3.2.2 below.

Table 2.3.2.2: Different types of water supply options for the population groups

Population / Options	Small Communities	Small Towns
Population	Population up to 2000	Population above 2000
Water Supply Options	<ul style="list-style-type: none"> • Hand dug well fitted with hand pump • Spring development • Tube well/ borehole fitted with hand pump • Mechanized borehole with limited distribution • Rainwater harvesting 	<ul style="list-style-type: none"> • Ground water based piped schemes • Spring or highland gravity water supply schemes • Surface water with minimal conventional treatment schemes • Other technologies based on ground conditions

Source: Compiled from CWSA (2007).

Water supply coverage in Ghana is defined within the NCWSP as follows (CWSA, 2007):

- Water facility must provide all year round potable water to community members.
- Each person must have access to a minimum, 20 litres of water per day.
- Each spout of a borehole /standpipe must serve a maximum of 300 persons and a hand-dug well of 150 persons.

- The maximum walking distance to a water facility must be equal to or less than 500 meters.
- The water system is owned and managed by the community through established structures.

In fact, differences exist between the coverage definitions used by the JMP of WHO/UNICEF and the country. For instance, while JMP considers maximum distance to a water facility to be 1 km, Ghana defines it to be equal or less than 0.5 km. According to the pilot report (GLAAS) (UN, 2008), Ghana has already achieved MDG water coverage target with figures of 90% and 71% for urban and rural respectively. But the same report also indicated country – reported coverage of 57% and 53% for the urban and rural respectively showing that Ghana is off target. However, the GLAAS report (UN, 2008) further admitted that the differences in reported JMP and country – reported figures resulted from differences in definitions, statistical methods and data sources used. JMP is currently engaging with countries to study the differences in reporting methods, with the aim of reconciling the coverage figures (UN, 2008).

2.3.3 Water Coverage in Ghana

The rural water coverage (rural communities and small towns) has increased but not to the extent anticipated. From 46.3 per cent in 2003, coverage increased to 51.1 per cent in 2004 and to 51.9 per cent in 2005. By 2006, coverage had increased to 52.86 per cent but lower than the 57.2 per cent that was projected in the Strategic Investment Plan (SIP) of the

CWSA. The national rural water coverage for the year 2007 stood at 54.86% which further increased to 58.97% as at the end of 2009 as shown in Table 2.3.3 below. In fact, progress towards achieving the ambitious water sector target of 85% by 2015 remains slow (this target is set higher than the MDG target of 73% by the World Community) and to achieve the target of halving the un-served population by 2015, Ghana needs to reduce the un-served rural population by half (that is, 23.57 per cent). The target for rural water coverage is thus 75.43 per cent, approximated to 76 per cent (GoG, 2007b; World Bank, 2007b; and CWSA, 2008).

Table 2.3.3: National Rural Water Coverage for the Year 2009

REGION	No. of Communities	Total Population	Population served	% Coverage
ASHANTI	2,556	2,713,186	1,957,323	72.14
BRONG AHAFO	2,660	1,974,329	1,053,444	53.61
CENTRAL	3,423	1,514,891	683,224	45.10
EASTERN	2,745	1,607,331	941,337	68.56
GREATER ACCRA	851	670,050	396,677	59.20
NORTHERN	3,896	2,078,055	1,249,047	60.11
UPPER EAST	1,726	1,168,347	691,580	59.19
UPPER WEST	926	614,893	469,425	76.34
VOLTA	334	1,349,026	1,095,464	62.63
WESTERN	1,741	1,583,149	699,817	44.20
TOTAL	23,760	15,673,310,	9,242,366	58.97

Source: CWSA, (2010)

2.2.4 Water Coverage in Northern Region

Similar to that of National Rural Water coverage that increased steadily from 2003 to 2009, the same pattern is being followed at the regional level. The Northern Region Rural Water coverage progressively increased from 33.1% in 2003 to 39.0% in 2004; 42.0% in 2005 to 58.12% in 2006 and 59.53% in 2007 to 60.11% in 2009 (CWSA, 2010).

The Regional coverage in water supply as at the end of 2009 as shown in Appendix C may portray good performance at the district level as far as achieving the 76% MDG in water delivery is concerned, but the same cannot be said at the Regional average level of 60.11%. From the Appendix C, three districts – namely Yendi, Zabzugu Tatale and West Gonja with 76.79%, 76.42% and 78.14% respectively in water coverage could be said to have met the MDG target of 76%. Nanumba North District with 74.47% coverage could also be said to be on the verge of meeting the MDG target unlike Tamale Rural with 8.13% coverage.

2.2.5 Highlights of water and sanitation interventions in Northern Region

Various organizations under different projects have been assisting Ghana Government in its drive towards meeting the MDGs as shown in Table 2.2.5.1 below.

Table 2.2.5.1: Highlights of Regional activities since 1994 (1)

Project/Duration	Targets Deliverables	Achievements	Remarks
CWSP 1 (1995-1999) Financed by IDA/GoG		<ul style="list-style-type: none"> • 130 BHs fitted with handpumps • 98 HDWs fitted with handpumps • 630 VIP latrines • 18 KVIP latrines • Capacity building for relevant stakeholders 	Covered East Gonja, West Mamprusi, Gushiegu/Karaga and Bole districts
GAP 1 (1990-1999) Financed by CIDA/GoG		Rehabilitated the 4No. systems of Bole, Tinga, Saboba and Zabzugu	
GAP 2 (1996-2000) Financed by CIDA/IDA/GoG		Rehabilitated the 9No. Systems of: Salaga, Gambaga, Nalerigu, Gushiegu, Wulensi, Bimbilla, Chereponi, Daboya and Walewale.	
CWSP 2 (1994-2000) Financed by IDA/GoG	19 BHs, 108 VIP latrines and 3 KVIP latrines	<ul style="list-style-type: none"> • 9 BHs • 108 VIP latrines • 3 KVIP latrines • 159 Rehabilitated BHs in Nanumba district 	Covered only Savelugu Nanton District Assembly for the new BHs and latrines and Nanumba for the BH rehabilitations

Source: CWSA, (2010)

Table 2.2.5.2: Highlights of Regional activities since 1994 (2)

Project/Duration	Target Deliverables	Achievements	Remarks
NORWASP 1(1999-2005) Financed by CIDA/GoG	<ul style="list-style-type: none"> • 700 Water points • 7,000 VIP latrines • Various capacity building interventions 	<ul style="list-style-type: none"> • 547 water points - 542 BHs - 5 HDWs • 7,577 VIP latrines • Capacity building • Spare parts outlets (DAs) 	Covered the 10 District Assemblies of the Eastern corridor of the Region.
NORWASP 2 (Nov. 2006-Apr.2007) Extension	Rehabilitation of 324 orphan BHs	328 BHs rehabilitated	Time extension to NORWASP 1
EU Assisted RWSP (2002-2005) Financed by EU/GoG	<ul style="list-style-type: none"> • 425 Water points • 25 piped schemes • 50 HDWs • 2000 VIP latrines • 50 KVIP latrines 	<ul style="list-style-type: none"> • 338 BHs (new) • 31 BHs (rehab.) • 11 piped schemes • 1,866 VIP latrines • 40 KVIP latrines 	Covered the 4DAs of: East Gonja, Central Gonja, West Gonja and West Mamprusi

Source: CWSA, (2010)

Table 2.2.5.3: Highlights of Regional activities since 1994 (3)

Projects/Duration	Target Deliverables	Achievements	Remarks
AFD Assisted RWSP (2002-2006) Financed by AFD/GoG	<ul style="list-style-type: none"> • 210 BHs • 7 pilot surface pipe schemes • 2,000 VIP latrines • 72 KVIP latrines 	<ul style="list-style-type: none"> • 179 BHs (new) • 49 BHs (rehab.) • 7 piped schemes • 2,000 VIP latrines • 72 KVIP latrines 	Covered 7No. DAs.
HIPC funds for Guinea Worm eradication (2003-2006) Financed by GoG	<ul style="list-style-type: none"> • 207 BHs (new) • 17 BHs (rehab) 	<ul style="list-style-type: none"> • 78 BHs (new) • 17 BHs (rehab) 	
I-WASH project (2007-2015) Financed by EC/UNICEF	<ul style="list-style-type: none"> • 270 BHs (new) • 20 HDWs • 60 Limited Mechanised schemes • 80 BHs (rehab) • 30 Alternative schemes 	<ul style="list-style-type: none"> • 64 BHs • 4 Mechanised schemes • 8 Alternate schemes • 401 VIP latrines • 41 KVIP latrines 	On-going
NORST (2008-2015). Financed by CIDA/GoG	30 Piped Schemes	No physical output yet	<p>Covers the 13 DAs of the Eastern corridor</p> <p>Faced with teething start-up problems</p> <p>Significant overhaul of Project design is recommended</p>

Source: CWSA, (2010)

2.2.6 Key Actors of the Water Sub-sector

The key actors in the sub-sector are not separate from those in the WASH (Water Supply, Sanitation and Hygiene) sector and they include ministries, departments, agencies and institutions like the following according to GoG, (GoG, 2007d):

- Ministry of Water Resources, Works and Housing (MWRWH)
- Ministry of Health (MoH)
- Community Water and Sanitation Agency (CWSA)
- National Development Planning Commission (NDPC)
- Regional Coordinating Councils (RCCs) and Municipal/District Assemblies (M/DAs)
- Ghana Standards Board (GSB).
- Environmental Protection Agency (EPA).
- Public Utility Regulatory Commission (PURC).
- Civil Society Organisations (CSOs) like international and local NGOs.
- The Private Sector (PS) including consultants, contractors and suppliers.

The key actors directly involved with the investment costs of community water supply infrastructure provision are the main government-implementing agency CWSA; CSOs and

the PS. The other stakeholders are in one way or the other directly responsible for formulation, implementation, monitoring and evaluation of policies, programmes and regulations.

2.4 Issues of Sustainability

Sustainability could be defined to mean a sustainable water supply and sanitation project that maintains, or expands, a flow of benefits at a specified level for a long period after external funding has been withdrawn. Few projects have yet been undertaken in the rural water supply and sanitation (WS&S) sector of developing countries that have successfully achieved full sustainability according to the definition above. It is estimated that 35% of all rural water supplies in sub-Saharan Africa are not functioning (Baumann, 2005), and despite the frequency with which it appears in development discourse, the reality of sustainability remains elusive. In spite of general agreement that sustainability of improvements in quality of life and valued benefits should be the goal of development assistance, there continue to be many projects undertaken by both local and international development organizations which fail to sustain benefits. Over the past decades, the Water and Sanitation for Health Project (WASH) has evaluated many projects and found that far too many lack the critical ingredients for sustainability. Thus, in its review of ten years' experience, the Water and Sanitation for Health (WASH) Project (1990) viewed sustainability as "the basic measure of success of both the national system for development and the community systems."

Sustainability pertains to multiple aspects of a rural water supply, with institutional, social, technical, environmental and financial dimensions (WELL, 1998). This accounts for the fact

that understanding and measuring sustainability is so difficult, and why solutions are highly context specific.

The widespread failures in water supplies have been attributed to a number of flaws in the project; the intervention was not desired by the community, the capital and/or recurrent costs are too high for the community, lack of ownership results in neglect of maintenance and repairs, the promised benefits do not materialise, education programmes are too short and trained members of the community move away or lose interest (Carter et al, 1999). Other factors such as the on-going use of traditional sources of water, poor systems of cost recovery and the distaste for the water from the improved source also contribute to undermining sustainability (Parry-Jones et al, 2001).

Practical responses to the challenge of sustainability are being tested and used by development practitioners the world over. Due to the widespread trend in developing countries of the devolution of responsibility for water schemes from governments to villagers, many of the interventions aimed at improving sustainability are taking place at the village level.

The use of appropriate technologies which are low cost, easy to maintain, simple to use and readily available is one response to the challenge of sustainability. Appropriate technologies are integral to the concept of Village Level Operation and Maintenance (VLOM) which emerged in the Water Decade (1981 – 1990). Many of its basic principles are still guiding the water sector today, though a tension persists between the ease of maintaining a system and its

durability (Reynolds, 1992). The VLOM conceptualisation of the community as an island also neglects to recognise the role of external support agencies, such as the government, in achieving sustainability (Webster et al, 1999).

It is common practice for village water schemes to be managed by a village committee of some sort; the creation of which is intended to enable communities to have a major role in the project, to have a sense of ownership over the scheme and to ensure its ongoing operation and maintenance (Harvey & Reed, 2006). It has been suggested that ‘beneficiary participation is the single most important factor contributing to project effectiveness’ (Narayan, 1994). Without participation, it has been claimed that systems are unlikely to be sustainable even if spare parts and repair technicians are available. Participation can take different forms, including the initial expression of the demand for water, the selection of technology and its siting, the provision of labour and local materials, a cash contribution to the project costs, the selection of the management type and even the water tariff (Harvey & Reed, 2006). It is thus the process through which demand-responsiveness is exercised, and empowerment achieved.

Participation is viewed as a tool for improving the efficiency of a project, assuming that where people are involved they are more likely to accept the new project and partake in its ongoing operation. It is also seen as a fundamental right; that beneficiaries should have a say about interventions that affect their lives (Pretty, 1995). Kumar (2002) asserts that participation is a key instrument in creating self-reliant and empowered communities, stimulating village-level mechanisms for collective action and decision-making. It is also

believed to be instrumental in addressing marginalisation and inequity, through elucidating the desires, priorities and perspectives of different groups within a project area. Participatory methods now dominate in the implementation of development interventions at the village level, the most common method being Participatory Rural Appraisal.

Participation is also aimed at increasing the sense of ownership over the water supply within community members. A history of top-down service delivery by governments and NGOs frequently leaves a legacy of dependency in the villages on external assistance. Consequently, in the event of a failure in the water supply the villagers do not make any attempt at repairs as it is not perceived to be their responsibility.

This research aims to look at the current status of sustainability in Nanumba North District, to explore whether and which of the aforementioned dimensions of sustainability are effective, where and how success has been achieved and what needs to be done to improve rates of functionality of water schemes. In light of the findings, development practice is given a closer critique.

2.4.1 Factors that Affect Sustainability

There are a number of factors that affects sustainability, some of which are discussed below.

2.4.1.1 Financial Sustainability

The financing process, that is, raising and maintaining adequate funds for **WS&S** facilities and activities, is clearly of critical importance to sustainability. Insufficient financing is a major factor in poor maintenance which, in turn, is often cited as a reason for project failure. The commitment of resources, particularly financial resources, by beneficiary communities is seen as an important indicator of the expected value of the project to these communities. Cost recovery contributes to sustainability not only through increasing resources available for sustaining and expanding benefits, but also by establishing relationships of accountability for resource use. Availability of funds for recurrent costs is often seen as a major factor influencing the sustainable operation of a **WS&S** intervention. Without adequate funding, proper operation and maintenance is not possible. Reducing the disparities in access to water and sanitation is also complicated by the need to improve the financial sustainability of providing services. The two principles of equity and financial sustainability are potentially at odds with one another. The long-term viability of public water and sanitation services requires user fees and inputs from beneficiaries. These are essential to ensure that services are adequately valued, maintenance is provided, overuse of scarce resources is avoided, and limited external resources can be stretched as much as practical. This often takes the form of water fees or contributions of time and money to the initial project establishment. At the same time, these fees can be obstacles to the poorest communities and households, resulting in inequitable benefits. Historically, this has led to subsidized water tariffs which are unsustainable and limit the incentives for providers to extend services to lower income areas (Olmstead 2003). The heart of the problem lies in the dual nature of water as a human right

and a scarce natural resource, the management of which entails costs. Water is a human necessity, but it cannot be provided in an unlimited fashion.

2.4.1.2 Socio-cultural Sustainability

Socio-cultural factors include such diverse elements as ethnic and language differences, religious divisions, social stratification, intergroup relations, and the status of women. All these have a bearing on the shape and scope of a project and cannot be ignored. Economic growth is often viewed as a right to be achieved with little regard to negative effects on the natural resource base. In some societies misuse of natural resources is driven by necessity, as there appear to be no other alternatives. Poor people are often unwilling to invest significant percentages of their income for connection to a sewer system, or even, for example, construction of a modern latrine. In other cases, indiscriminate dumping of wastes is often viewed as an acceptable procedure by individuals because, they reason, others are doing it.

Socio-cultural and institutional aspects also refer to the socio-cultural acceptance and appropriateness of the system, perceptions, gender issues and compliance with legal and institutional frameworks. Deficiencies in the policy formulation on water and sanitation especially in the area of management has further compounded the issue of sustainable use of these facilities since there is no sufficient legal framework in place in this regard. The local managers in the rural areas, popularly known as WATSAN committees, whose responsibilities are to oversee the management of water and sanitation facilities in their communities more often than not neglect their responsibilities due to what they attributes to lack of incentives from those in authority.

2.4.1.3 Technological Sustainability

Technology and operation relate to the functionality and ease of constructing, operating and monitoring the entire system as well as its robustness and adaptability to existing systems. Appropriate technology choice cultivates effective community demand by providing consumers with information about the potential water supply and sanitation solutions that consider local technical capacity and are suitable for local environmental, cultural, and economic conditions. A technology will be sustainable to the extent that it is appropriate as judged by its suitability, responsiveness, acceptability, servicing needs, standards, and cost (OECD, 1989). Technologies must be chosen which provide an appropriate level of service for meeting consumer needs now and in the future. While this requirement appears self-evident, there are many examples of technologies which have been found successful in one setting but not in another. The technology must also be adaptable and durable, using readily available materials and permitting simple repairs and maintenance by local mechanics. Spare parts generally should be available from within the country to avoid expenditure of foreign exchange or lengthy delays in repairs. The chosen technology must meet the community's social and cultural standards. Issues involving choices such as location of water and sanitation facilities are important considerations that must have serious community input. Servicing requirements should be simple and inexpensive. Overlooking servicing requirements is almost certain to invite the breakdown of the system. Selecting standardized equipment that is used in other parts of the region or country or in other sectors (agriculture or industry) facilitates the procurement of spare parts and the services of mechanics when repairs are needed. The choice of technology affects people's willingness to pay as well as the prospect for workable O&M arrangements and for continued use of the system.

2.4.1.4 Institutional Sustainability

The definition of sustainability indicates that institutional capacity is an essential condition for maintaining the flow of project benefits. Institutional strengthening includes attention to structure, policy, and staff training. WASH has found that institutional change needs to be promoted as beneficial to those affected, so that they will more readily understand why they are required to change the way they conduct their business (Edwards, 1988).



CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter provides the methodology for the study. It contains the population of the study, the sample size determination, data collection methods and instruments as well as tools for data analysis among others.

3.2 Data collection

Good data collection must allow for collection of complex but rich data. To accomplish this, semi-structured interview guides were developed and used. The researcher engaged in focus group discussions with relevant key stakeholders and also reviewed existing reports for secondary data.

The services of three (3) research assistants were employed. The research assistants were recruited and trained on professional, effective and efficient ways of administering questionnaires.

3.3 Data Gathering Instruments

The research made use of both primary and secondary data sources. The secondary sources included statistics on existing water and sanitation facilities, performance reports of CWSA, demographic data of the study area, reports of the Water Boards, reports of the Sanitation and

Water subcommittee of the District Assembly, the DA's Medium Term Development Plan and the District Water and Sanitation Plan, among others.

The primary source of data was obtained from interviewing respondents, observations, information from focus group discussions, and key informants. Interview guide and structured questionnaires were designed to guide the interview process. Photographs of relevant sites and infrastructures were taken.

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3.4 Sampling and Sampling Procedure

The nature of the research coupled with time and resource constraints, called for the use of purposive sampling technique to select the sample size of 65. The 65 sample size was made up of five (5) recognized bodies representing the sector players in water and sanitation while the remaining 60 respondents were chosen from the communities across the six area councils of the District that had benefitted from water and sanitation interventions. The purposive technique was employed because the research was aimed at soliciting data from relevant bodies and institutions. Since the study area is made up of six area councils, a quota sampling technique was used to get ten (10) respondents from each area council. For the individual respondent that constitutes the ten (10) people from each Area Council, a simple random sampling was implored for the selection.

The researcher also engaged in focus group discussions with the five (5) stakeholders already involved in water and sanitation intervention in the District which includes District Water and Sanitation Development Board (DWSDB), Community Water and Sanitation Agency (CWSA), the District Water and Sanitation Team (DWST), UNICEF, SONGTABA and AGREDS.

The above mentioned category of people and agencies provided adequate data to the research, hence the units of analysis. The researcher used simple random sampling to select the individual respondents from the area councils. The numbers of all houses in the district were collected and put in a box by area council. They were mixed thoroughly and then 60 out of the number were altogether picked at random. All these processes were carried out by the research assistants. These categories of people constitute the population for the study.

3.5 Analytical Tools

The data collected were coded and sorted into themes (thematic analysis) and the analysis and discussions were generally based on the thematic areas. To enhance visual appreciation of data collected, descriptive statistical tools such as percentages, bar graphs, cross tabulation were used to present data collected in summarized charts and graphical forms where necessary. The researcher then used interpretive, discursive, and narrative analytical methods to analyze the data.

3.5 Data Processing

The data gathered was edited to minimize errors that may adversely affect the study. It was ensured that all the questionnaires were filled appropriately and none was left out. The data was also coded. This was to make the data entry and analysis using Excel and SPSS software easy.

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CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This chapter contains presentation and analysis of the data collected in relation to the objectives of the study. Tables and graphs are the tools used to present data and descriptive analyses are then made.

4.2 Demographic Characteristics of Respondents

The respondents were sampled from five (5) relevant institutions and ten (10) from each of the six Area Councils. Out of the total number of 65 respondents, forty (40) of them were females representing 62.5% while the remaining twenty five (25) was represented by 37.5% males as shown in Table 4.2.1. In Ghana, traditionally, women and children are the primary collectors, users, and managers of household water. When water systems break down women and children are the most affected, since they have to travel far to search for water for household use. Women constitute major stakeholders in water resource management but their roles and knowledge in this area are often over-looked especially in the rural areas.

Table 4.2.1: Sex Distribution of the respondents

Sex Distribution	Number	Percentage (%)
Male	25	37.5
Female	40	62.5

Source: Field survey, May 2011

4.2.2: Age Distribution of Respondents

Majority of the respondents falls within the age range of 34 – 41 years representing 43.1% while the least falls within 42 – 49 years representing 4.6% as shown in Table 4.2.2. The 43.1% of the respondents fall within the active workforce that is also productive. They are likely to suffer from water-borne or water-related diseases when they result to drinking from unprotected water source should any of the potable water systems break down which invariably affects productivity. This confirms the fact that at any one time, half the people in the developing world are suffering from diseases associated with inadequate water supply and sanitation services and more than half of hospital beds in the world are filled with people suffering from water related diseases (DFID, 2009).

Table 4.2.2: Age Distribution (years) of the respondents

Age Distribution	Number	Percentage (%)
18 -25	7	10.8
26 -33	22	33.8
34 – 41	28	43.1
42 – 49	3	4.6
50 & above	5	7.7

Source: Field survey, May 2011

4.2.3: Marital Status of Respondents

Sixty percent (60%) of the respondents are married while 30.8% are single as shown in Table 4.2.3 below. The implication of this is that there is high level of dependants among the married people which results in high demand for water and sanitation facilities. This category of people would suffer more for inadequate provisions and break down of these facilities.

Table 4.2.3: Distribution of Marital Status of the respondents

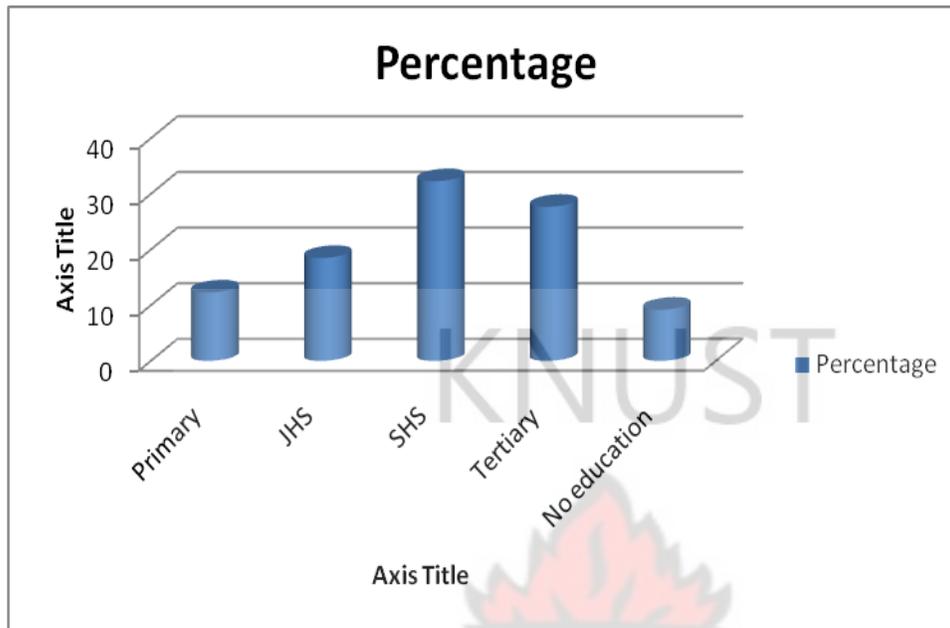
Marital Status	Number	Percentage (%)
Married	39	60
Divorced	4	6.1
Widowed	2	3.1
Single	20	30.8

Source: Field survey, May 2011

4.2.4: Educational Background of Respondents

While those who have had no formal education accounted for 9.2% of the respondents, a larger group of them representing 32.3% have had formal education up to SHS as represented in Figure 4.2.4. This implies that with the high level of literacy among the respondents, there would be high level of consciousness on the effects of lack of water and sanitation facilities. They would appreciate and have better understanding of their rights as far as water and sanitation provisions are concerned. Data gathered from them would be close to accuracy since their understanding of the questions posed to them would not be in any doubt.

Figure 4.2.4: Educational Background of the respondents



Source: Field survey, May 2011

4.3 Opportunities for Participation by Major Stakeholders in Water and Sanitation

All the relevant agencies that are into water and sanitation had been in operation in the district between 6 to 10 years. Their interventions in the areas of water and sanitation are aimed at addressing the people's poor health conditions associated with lack of water and sanitation facilities and also to increase accessibility.

Unfortunately, the various organizations operating in the District are only aware of the physical presence of one another but unaware of how they work. Hence, there is no coordination among the sector players in the District. The level of fragmentation in the operation of the service providers as exhibited in the District is therefore characterized by use

or non-use of existing structures, cost sharing and contributions arrangements, pre-facility construction requirements, subsidy and non-subsidy approaches, operational procedures/guidelines/manuals and delivery principles – demand versus supply driven among others. Due to lack of uniform or common approach to interventions by the service providers, the NGOs tend not to comply with the national community water and sanitation programme (NCWSP) strategy and they operate independently of the Community Water and Sanitation Agency (CWSA) such that many of these NGOs operate the policy of in-kind rather than cash contribution to capital cost. The NGOs operation thus creates some confusion and also throws up mixed messages at the community and district level. This is because all the NGOs operating in the district are not aware of each other's modus operandi. Undoubtedly, there is no evidence of collaboration among them. The consequences of this is that lack of collaboration or collective participation by stakeholders do not engender sustainability since different organizations operates at different levels.

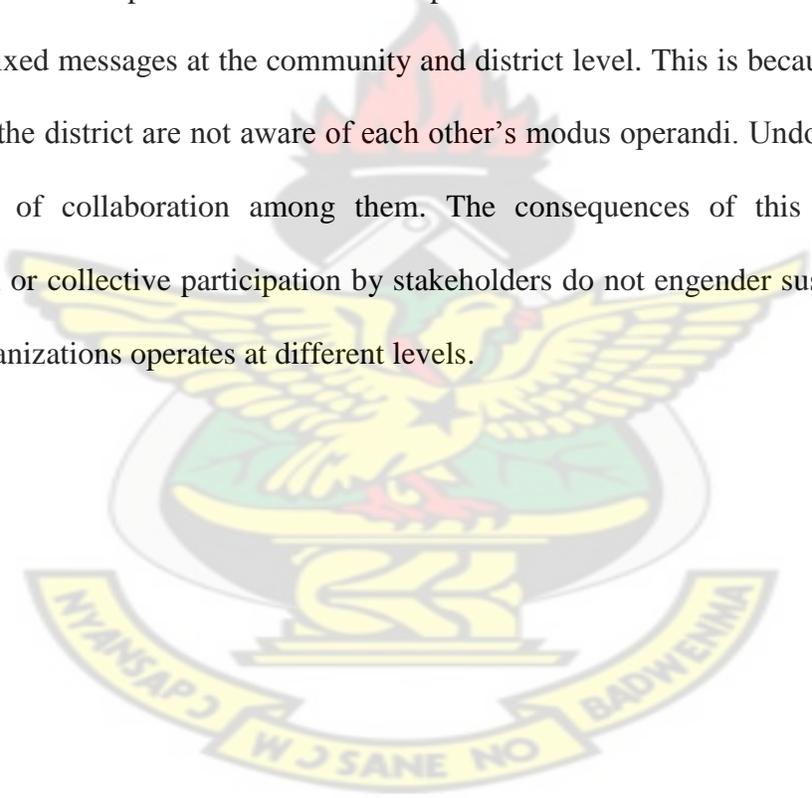


Table 4.3.1: Distribution of participants for focus group discussion

Organization	Number of participants		Total
	Male	Female	
DWST	3	0	3
SONGTABA	3	3	6
UNICEF	3	1	4
DWSDB	6	1	7
AGREDS	7	3	10
WATSAN Committee	25	17	42
Total	47	25	72

Source: Field survey, May 2011

4.4 Determination of the Nature of Interventions and their Effects on Sustainability

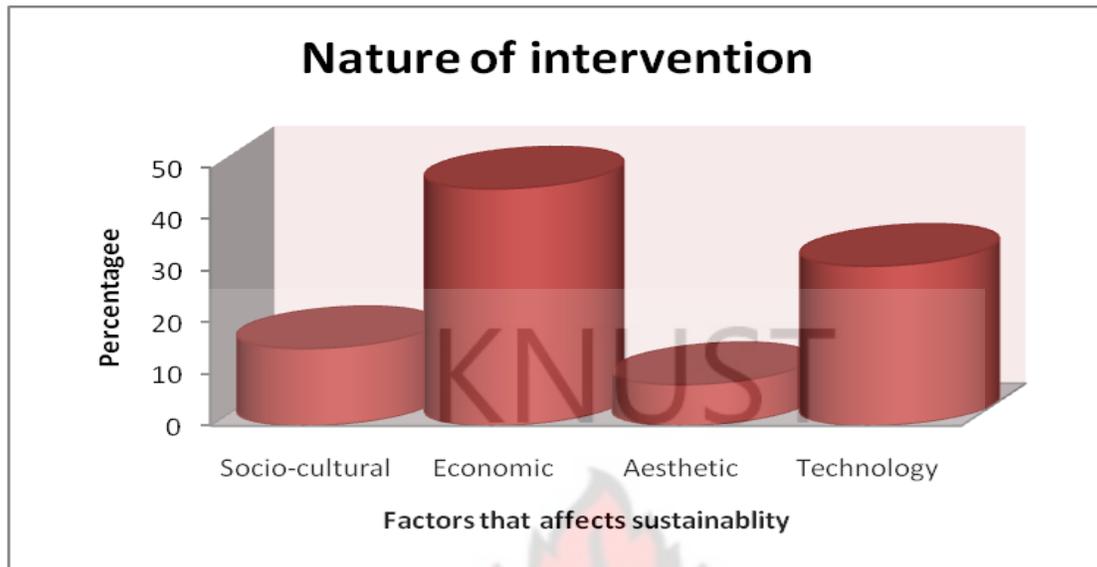
The significance of economic sustainability of water and sanitation interventions cannot be overemphasized. For the facilities to continue to serve their intended purposes in a sustainable manner there must be adequate arrangement put in place for financial responsibilities towards operation and maintenance of the facilities. As reflected in Figure 4.4 below, economic factor dominated with 46% over other factors which obviously confirm

the fact that availability of funds for recurrent costs is often seen as a major factor influencing the sustainable operation of a WS&S intervention. Without adequate funding, proper operation and maintenance is not possible (WASH, 1994).

Technological options of the facilities also provide useful insight into their sustainability. Thirty one per cent (31%) of the respondents alluded to the fact appropriateness of technology choice would cultivate effective community demand by providing consumers with information about the potential water supply and sanitation solutions that consider local technical capacity and are suitable for local environmental, cultural, and economic conditions. A technology will be sustainable to the extent that it is appropriate as judged by its suitability, responsiveness, acceptability, servicing needs, standards, and cost (OECD, 1989).

From the above analysis, it is therefore obvious that economic conditions and technological considerations affect sustainable project management with particular reference to water and sanitation interventions.

Figure 4.4: Nature of Interventions



Source: Field survey, May 2011

4.5 Identification and Assessment of the Sustainability Provisions

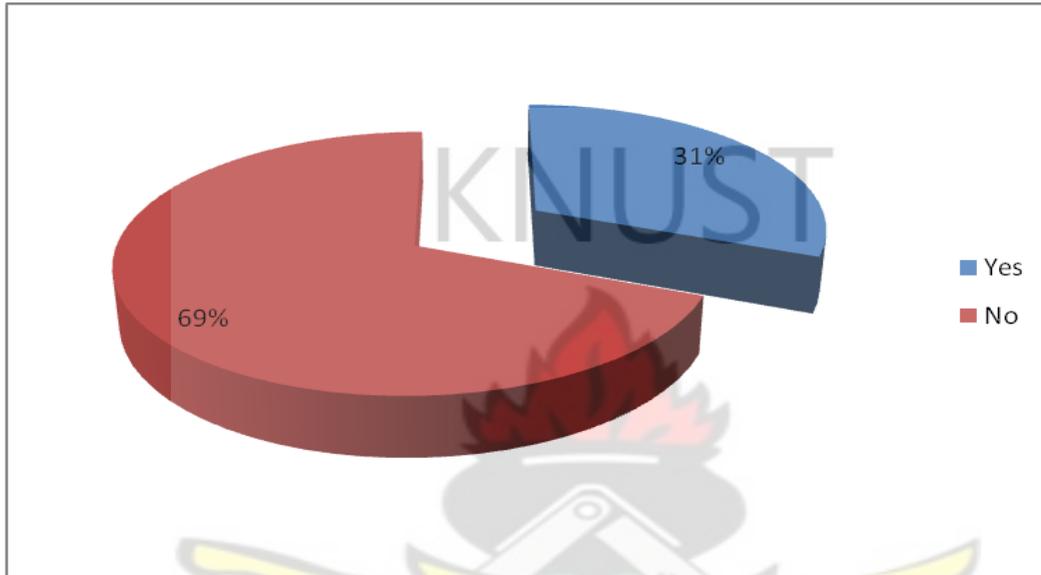
For water and sanitation facilities to have sustainable use by the beneficiaries, some measures are expected to be put in place to forestall any breakdown that may result in serious consequences.

4.5.1 Management Committee

Essentially, management committee plays a major role in ensuring sustainability of water and sanitation interventions. It is a normal practice that after the provision of the facilities, a committee is put in place to oversee the day-to-day operation of the facilities. This practice is expected to forestall any eventualities that may lead to total break down of the systems. From

Figure 4.5.1a below, 69% of the respondents said that there were no management committees in place while 31% agreed that they had.

Figure 4.5.1a: Availability of Management Committee



Source: Field survey, May 2011

The inability to have management committee in place to see to the operation and maintenance of some of the water facilities in the district had led to the neglect of some facilities as shown in the Figure 4.5.1b below.

Figure 4.5.1b: Abandoned borehole & Enviro-loo toilet at Bincheratanga & Lanja respectively



Source: Field survey, May 2011

As indicated by 31% of the respondents that do not have management committees in place, they usually approached the local government authorities for assistance whenever their systems break down.

4.5.2. Community Involvement in Project design and Implementation

Community participation was lacking in the design and implementation plan of the interventions thereby leaving the users to no other options other than to accept the choice of the providers. This tendency made it difficult for the users to operate and maintain the

facilities after they had been provided. In Lanja for instance, where a 12-seater Enviro-loo latrine facility was provided for the community by an NGO working in the District, the facility had since been abandoned due to the fact that the community members were not involved in the processes that led to the intervention. This affirms the fact that community participation is seen as a fundamental human right and that beneficiaries should have a say about interventions that affects their lives (Pretty, 1995). Kumar (2002) asserts that participation is a key instrument in creating self-reliant, empowered communities, stimulating village-level mechanisms for collective action and decision making.

The technological context includes the types of technology envisioned for the project, the general level of mechanical skills available within the population, availability of equipment and spare parts, and training opportunities relevant to the technologies used. Effective technology transfer is considerably more complex than the installation of new equipment and a short training program for users or maintenance personnel. Appropriate technologies are integral to the concept of Village Level Operation & Maintenance (VLOM) which emerged in the water decade (1981 – 1990).

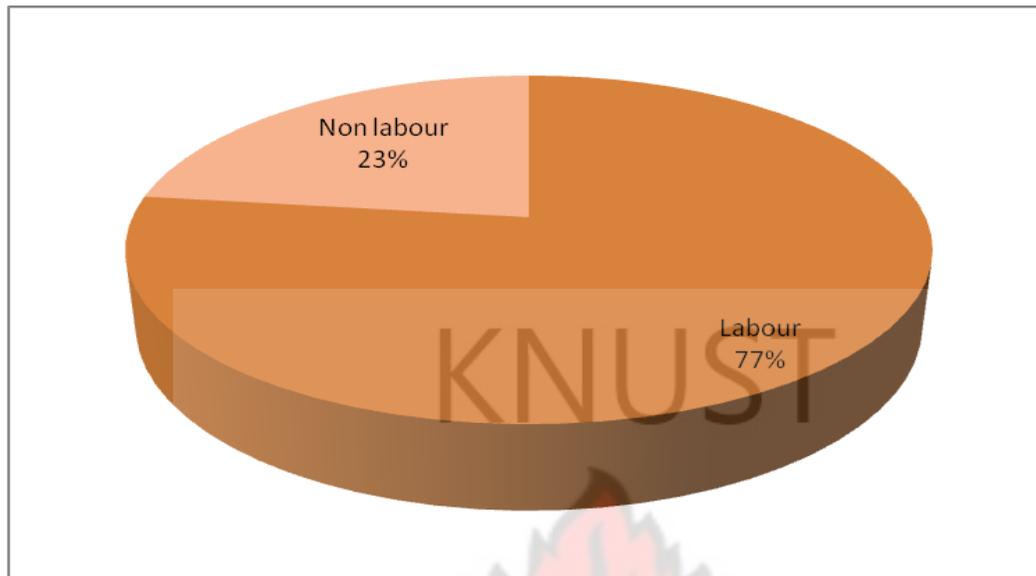
4.5.3 Equitable tariff structure

Table 4.5.3: Contribution towards construction of facilities

Contribution	Number	Percentage (%)
Labour	50	76.9
Non labour	15	23.1
Total	65	100.0

Source: Field Survey, 2011

Figure 4.5.3: Contribution towards construction of facilities



Source: Field survey, May 2011

As one of the key principles of National Community Water and Sanitation Policy, it is the requirement that beneficiary communities pay a 5-10% cash contribution toward the capital cost of the least-cost, technically feasible water facility option. The premise of the policy is that the mobilization of such funds demonstrates a commitment by the community and further serves as an indicator that the water facility may be operated and managed in a sustainable manner (Oheneba-Mensah, 2003).

Contrary to the Policy, however, various agencies or development partners have adopted different approaches to project interventions in most cases and in recent times whereby full cost of projects are being borne directly by most donors that currently operate in Northern

Region, due to high poverty level of the people. Nevertheless, the beneficiary communities still adopts another form of contribution to the projects. The result revealed that community members understand reasons for their participation aimed at efficiency, building a sense of ownership and capacity building for purpose of sustainability. Whereas fifty (50) of the respondents (76.9%) agreed that they contributed labour towards the construction of the facilities, fifteen (15) of them representing 23.1% contributed differently other than financial towards the projects as shown in Figure 4.5.3. The respondents admitted that it was just not enough to provide labour as community contribution, though necessary in-kind contribution to capital cost, but rather putting in place effective and efficient management systems would certainly guarantee sustainability of the facilities.

Appropriate tariff setting was another relevant sustainability provision for operation and maintenance of the facilities. For water and sanitation interventions to meet user's needs and satisfaction in terms of availability and accessibility, realistic tariff structure must be in place. Analysis of the varied responses indicates that they contributed as low as fifty Ghana Pesewas (GH50p) monthly by household , GH¢1.0 by household every three months, levies one another whenever the facilities developed problem in the ratio of 55%, 35% and 15% respectively. The pay-as-you-fetch system in case of water facilities is not being practiced at all in the communities visited even though it was considered to be one of the most reliable and efficient ways of carrying out O&M of the facilities. This implies that there was no guarantee of spontaneous response to any major breakdown of the facilities should it occur since there is no evidence of sufficient funds available for such purpose.

4.5.4 Capacity Building for WATSAN Committee

For water and sanitation facilities to operate optimally, it means that there must be provision in place to ensure that at no point in time that the systems become dysfunctional. The community members alluded to the fact that it was only at the time the facilities were to be provided that some people were made to constitute the WATSAN committee and they were given some trainings as to the role each member is expected to play. But there has not been another training given to them afterwards. The community members even wondered if the initial training given to the WATSAN committee could stand the test of time especially when it comes to fixing major breakdowns. To have a well periodically trained WATSAN committee in place indicates that repair works, when necessary, are readily carried out on broken down facilities to ensure continuous use of the facilities. Preventive maintenance would be carried out by the committee in order to forestall any major breakdown that may occur.

4.5.5 External Support

Considering the poverty level of the people coupled with the grossly inadequate tariff structure in place, the community members look up to external organizations like NGOs and District Assembly (DA) for financial support to fix any major breakdown they may encounter with these facilities. The same approach applies if the WATSAN committee is technically deficient in handling a much more complex breakdown that surpasses their competency. When it comes to financial support from the DA to fix a broken down borehole, the community members are often been denied of such assistance with the excuse that there

is no money. On the other hand, the technical experts that can easily fix major breakdowns of water facilities are just few thereby not easily accessible.

4.6 Determination of Enhanced ways of Ensuring Sustainability of the Facilities.

A paradigm shift from the old ways to new ways of doing things would guarantee sustainable use of sanitation and water facilities. It is in the light of this that enhanced ways such as community involvement in the processes of service delivery and appropriate tariff review mechanisms are in place to ensure sustainability.

4.6.1 Level of involvement of community members in project delivery

In terms of approaches to solve the problems of access to safe water and adequate sanitation, there have been two major shifts in recent years. First, at the project level there has been a shift of approach from supply driven to demand led. As Breslin (2003) points out, supply driven water interventions have not succeeded in providing poor communities with sustainable water supplies. “Communities that simply receive a water point and play a minor or symbolic role in implementation understandably do not feel a sense of ownership of the project.” (Breslin 2003)

In the areas studied, beneficiaries were of the view that every stage in donor intervention with respect to provision of water and sanitation facilities must seek to involve them in the entire processes. This simply implies that community members are willing and ever ready to

be involved at all levels of development especially in the area of water and sanitation intervention.

According to them (the community members), involving them in the entire process would imply participatory nature of the process; community needs are addressed and gives sense of ownership to the entire community.

4.6.2 Tariff review

Under the strategic operational guidelines spelt out in the Small Communities Water & Sanitation Policy (2005), Communities are enjoined to ensure the setting and payment of adequate tariffs with transparent accounting and management practices. Much as the community members admitted that what they contribute towards O&M is woefully inadequate coupled with the mode of payment which is also unreliable, they all agreed to review the tariffs to make it realistic with the support from the authorities.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

5.0 Introduction

This chapter contains summary of the findings from the research. It further offers some recommendations after having drawn some conclusions based on the findings.

5.1 Summary of Findings

Majority of the respondents were females with 62.5% as compared to males with 37.5%. This is as a result of the fact that women and children are most affected when the water facilities break down because of long distance they have to cover in search of water for the household.

Despite the fact that all the relevant agencies that are into Water and Sanitation had been operating in the district between 6 – 10 years, none of them was aware of each other's modus operandi in the district.

Economic factor dominated with 46% over other factors to confirm the fact that availability of funds for recurrent costs plays a major role in influencing the sustainable operation of water supply and sanitation. Without adequate funding, proper operation and maintenance is not possible.

A technology will be sustainable to the extent that it is appropriate as judged by its suitability, responsiveness, acceptability, servicing needs, standards, and cost (OECD, 1989). Technological options of the facilities also provide useful insight into their sustainability. Therefore, 31% of the respondents prefer the technology choice that would be suitable for their local environment, cultural and economic conditions.

It was evident that lack of management committee, as reflected in the responses from 69% of the respondents, accounted for the inability to have sustainable use of the facilities. The management committee is responsible for the operation and maintenance of the facilities. The consequences of lack of management committee cannot be overemphasized as some of the facilities had been abandoned since they broke down.

The community members often find it difficult to operate and maintain the facilities after they had been provided simply because they were not involved in both the design and implementation plan of the intervention. This was demonstrated in Lanja community where a 12-seater Enviro-loo latrine facility was provided and had since been abandoned due to non-involvement of the beneficiaries in the project design.

The study found out that inequitable tariff structures that were in place in the communities could not sustain the operation and maintenance of the facilities. The contribution by household towards O&M ranges between GH¢50p and GH¢1.0 every three months interval, though irregularly done, but most importantly too meagre against any sustainability plan.

Capacity building was found to be weak in the communities visited where these facilities were available. The WATSAN committees that are in place had not been trained thereby giving a big challenge to the operation and maintenance of the facilities.

Considering the poverty level of the people coupled with lack of technical skills to manage major breakdown of the facilities, the community members result to seeking for both financial and technical supports to fix the problems they encountered with the facilities.

From the responses gathered during the study, it was very clear that the beneficiaries would wish that they are involved at every stage of the donor intervention.

Much as the community members admitted that their contributions towards O&M is woefully inadequate coupled with the mode of payment which is also unreliable, they all agreed to review the tariffs to make it realistic with the support from the authorities.

5.2 Conclusion

Sustainability in the areas studied is clearly being undermined by several factors that include economic and technological issues, the constituent elements of which must be addressed by implementing agencies, donors and government alike. The drive behind attempts to meet the Millennium Development Goals is drawing attention towards increased coverage to meet targets which potentially and harmfully distracts from the need for maintenance of water and sanitation schemes: maintenance of both the soft- and the hardware, which is so critical for

ongoing service provision. There is, therefore, the need to re-look at the issues surrounding the continuous provision of water and sanitation facilities. Much more efforts are needed to ensure that these facilities are there for the people at all times in a sustainable manner.

Various factors are interacting to maintain the intended objectives of any water and sanitation interventions. The utilization of water sources mainly depended on their functionality; this in turn depends on the magnitude and type of community participation, the whole purpose focused to sustain the continued use of water supply and sanitation projects. Considering the meager water tariffs being charged, involving community at all stages of water and sanitation development and building adequate skill and capacity to maintain water and sanitation facilities among others are essential factors to sustain the systems. Lack of coordination among the stakeholders (NGOs) do not engender sustainability since the NGOs tend to operate with varied approaches some of which have the tendencies to cause an overlap in the mode of service delivery as well as throwing confusion among the beneficiaries.

5.3 Recommendation

The study revealed that it is not enough to have water and sanitation facilities in place but much more importantly to make the interventions, when provided, sustainable. During the study, the findings identified ways by which the interventions can be made use of in a sustainable manner. Therefore, the following recommendations are based on the findings from the study.

Firstly, there must be a concerted effort towards harmonization of activities of all development partners operating in the district. The District Assembly could have a desk purposely responsible for coordinating operations of development partners as well as harmonizing their activities to prevent overlapping of roles. By so doing, all development partners would carry out their interventions in an organized manner and with uniformity to engender sustainability.

Besides, the choice of technology must take cognisance of the ability of the beneficiaries to operate and maintain without being confronted with undue difficulties. Indigenous knowledge could be sought from the users when choosing a particular technology so that the facility would be user-friendly, easy to maintain and cost effective. A community dialogue session could be held to solicit views on their preference of technology in terms of cost-effectiveness and so on.

Also, as a matter of high importance, every water and sanitation facilities provided should have trained WATSAN committees in place. Institutionalization of periodic refresher training for the WATSAN committees already in place for skill enhancement in management of the water and sanitation facilities would go a long way to ensure sustainability. WATSAN team members could undertake exchange visits so that there is greater information sharing at the district level regarding issues of sustainability.

Furthermore, involvement of beneficiaries in all the processes of the intervention could be considered as pre-requisite condition for partnership engagement with both the District

Assembly and the community members. This practise would bring about community ownership that would guarantee sustainable use of the facilities. Considering the modest water service fee, distance from water points, involving community at all stages of water development, and building adequate skills and capacity to maintain water sources are essential factors to sustain the water and sanitation interventions.

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APPENDIX A

INSTITUTE OF DISTANCE LEARNING

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

COMMONWEALTH EXECUTIVE MASTER IN PUBLIC ADMINISTRATION (CEMPA)

KNUST

THESIS QUESTIONNAIRE FOR SECTOR-LEVEL STAKEHOLDERS ON SUSTAINABILITY

This is a research aimed at an ‘Assessment of sustainability of water and sanitation interventions in Northern Region with particular reference to Nanumba North District’.

Responses to this questionnaire are therefore needed purposely for academic work (Thesis). I therefore wish to categorically state that the anonymity of responses and respondents will be guaranteed. It is my fervent hope and believe that you will take time off your busy schedules to respond to this questionnaire.

Section A: Respondent's Background Information

Sex: Male / Female (Please, circle)

Age: 18-25; 26-33; 34-41; 42-49; 50 & above (Please, circle)

Marital Status: Married; Single; Divorced; Widowed (Please, circle)

Educational Background: Primary; JHS; SHS; Tertiary; No education (please, circle)

Enumerator's Code.....



Section B: Objective 1

To determine the opportunity for participation by major stakeholders of the water and sanitation concerns.

1. What intervention is the NGO(s) you are working with carrying out in the district? Please tick the appropriate intervention(s). Tick more than one if interventions are more.
A) Education B) Health C) Water and Sanitation D) Advocacy
E) Others (please, specify)
.....
2. How long have you been operating in this district?
A) 1-5years B) 6-10years C) 11-15years D) 16-20years E) 21years & above
3. Why is your NGO carrying out the intervention(s) as stated in (1) above?
A) Falling educational standards B) Increase accessibility to water & sanitation facilities
C) Poor health conditions D) Other reasons. Please, specify
4. Are you aware of any other NGOs operating in the district carrying out similar works?
A) Yes B) No C) Don't know
5. If Yes, what is your level of collaboration
A) High B) Moderate C) Low D) Do not exist at all E) Others. Please, specify
6. At what stage do you involve the beneficiary in your activities?
A) planning B) implementation C) planning & implementation D) none

Section C: Objective 2

To assess the nature of interventions in terms of resource provision, socio-cultural feasibility, aesthetic and technical considerations.

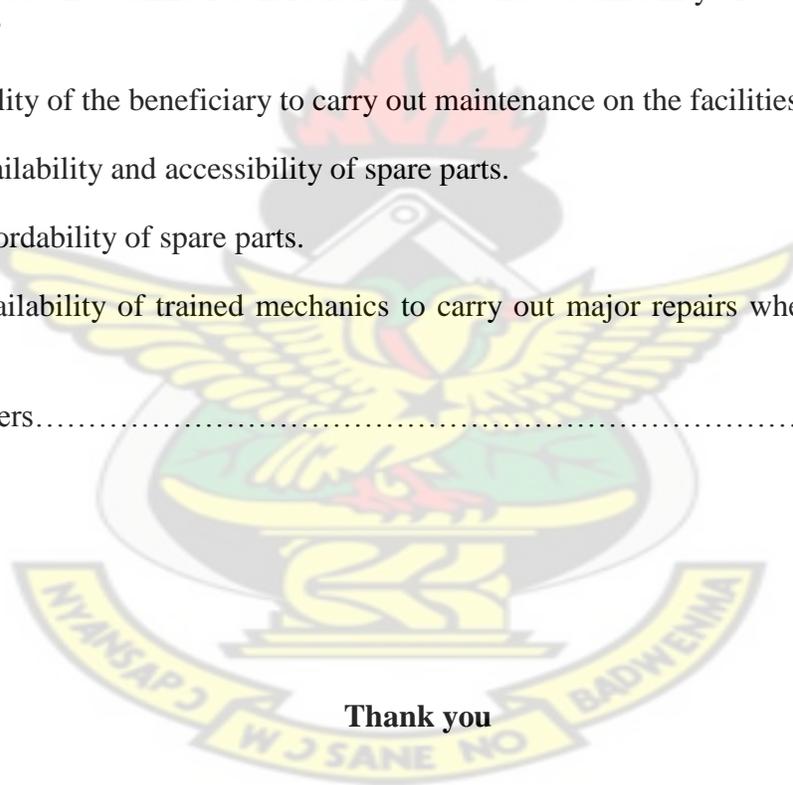
7. Do your organization carry out feasibility studies as part of your activities prior to the intervention(s)?
- A) Yes B) No
- If Yes, state reasons.....
- If No, state reasons.....
8. In your opinion, which of the following affects the sustainability of your organization's water and sanitation interventions in the communities? Tick more than one if necessary.
- a) Socio-Cultural factors b) Economic condition
- c) Aesthetic condition d) Technical/Technological consideration
9. How does a Socio-Cultural factor in (8) affect sustainability of water and sanitation interventions?
- a) When interventions does not conform to traditional beliefs.
- b) When interventions portrays class differentiation among beneficiaries.
- c) When interventions does consider the physically challenged and the aged.
- d) Others.....
-
10. How does economic condition affect the sustainability of development interventions of the NGO?
- a) Decrease project life span.
- b) Increase in cost of operations affects maintenance.
- c) Others.....
-

11. How does aesthetic condition affect the sustainability of water and sanitation intervention?

- a) If the environment of the facility is smells of bad odor.
- b) If the facility is always being littered with wastes including animal wastes.
- c) If the facility is being surrounded by flies.
- d) All of the above.
- e) Others.....
.....

12. How does the technical consideration affect the sustainability of water and sanitation interventions?

- a) Ability of the beneficiary to carry out maintenance on the facilities.
- b) Availability and accessibility of spare parts.
- c) Affordability of spare parts.
- d) Availability of trained mechanics to carry out major repairs when facility breaks down.
- e) Others.....



Thank you

APPENDIX B

INSTITUTE OF DISTANCE LEARNING

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

COMMONWEALTH EXECUTIVE MASTER IN PUBLIC ADMINISTRATION (CEMPA)

**THESIS INTERVIEW GUIDE FOR INDIVIDUAL BENEFICIARY AND FOCUS GROUP
ON PROJECT LEVEL SUSTAINABILITY**

This is a research aimed at an ‘Assessment of sustainability of water and sanitation interventions in Northern Region with particular reference to Nanyamba North District’.

Responses to this questionnaire are therefore needed purposely for academic work (Thesis). I therefore wish to categorically state that the anonymity of responses and respondents will be guaranteed. It is my fervent hope and believe that you will take time off your busy schedules to respond to this questionnaire.

Section D: Respondent’s Background Information

Sex: Male / Female (Please, circle)

Age: 18-25; 26-33; 34-41; 42-49; 50 & above (Please, circle)

Marital Status: Married; Single; Divorced; Widowed (Please, circle)

Educational Background: Primary; JHS; SHS; Tertiary; No education (please, circle)

Enumerator’s Code.....

Section E: Objective 3

To identify and assess the sustainability provisions.

13. Has the water and sanitation interventions introduced by some development organizations met the expectations of the beneficiaries?

- A) Yes B) No

If Yes, how?.....

If No, how?.....

14. Do you have management committee in place to preside over of the water and sanitation interventions?

- a) Yes b) No

If Yes, have they been trained?

15. Do you have tools in case of minor maintenance to be carried out on the facility?

- A) Yes B) No

16. To what extent did the project establish that there was *demand* for *improved* water and sanitation supply at the level of service provided, and that user-demand would translate into *willingness to pay*?

.....
.....
.....

17. To what extent did members of the community actively participate in project design and implementation, with a range of groups within the community represented?

.....
.....
.....

18. To what extent has the community financial or in-kind contribution to the capital cost of the water and sanitation supply and how have these contributions been used?

.....
.....
.....

19. To what extent has an equitable tariff structure been put into place that is based on O&M costs and/or capital replacement costs and/or affordability?

.....
.....

20. To what extent is regular recording of breakdowns and down time carried out by Communities?

.....
.....
.....

21. To what extent is there a representative village organization that is well trained and manages the system to everyone's satisfaction?

.....
.....
.....

22. To what extent are funds regularly collected, recorded, well-managed, and are available and sufficient to cover the most expensive jobs?

.....
.....

23. To what extent is a regular programme of preventive maintenance carried out?

.....

24. To what extent do external organizations¹ provide support to community decision-making and management and carry out regular monitoring of water point functionality?

.....

.....

25. To what extent is support provided for technical issues that are beyond the capacity of communities to resolve?

.....

.....

26. To what extent do external support organizations share cost of recurrent O&M as well as expensive repairs and replacement?

.....

.....

27. To what extent are supply chains for spare parts and other service providers able to operate in a supportive environment and function well to meet demand?

.....

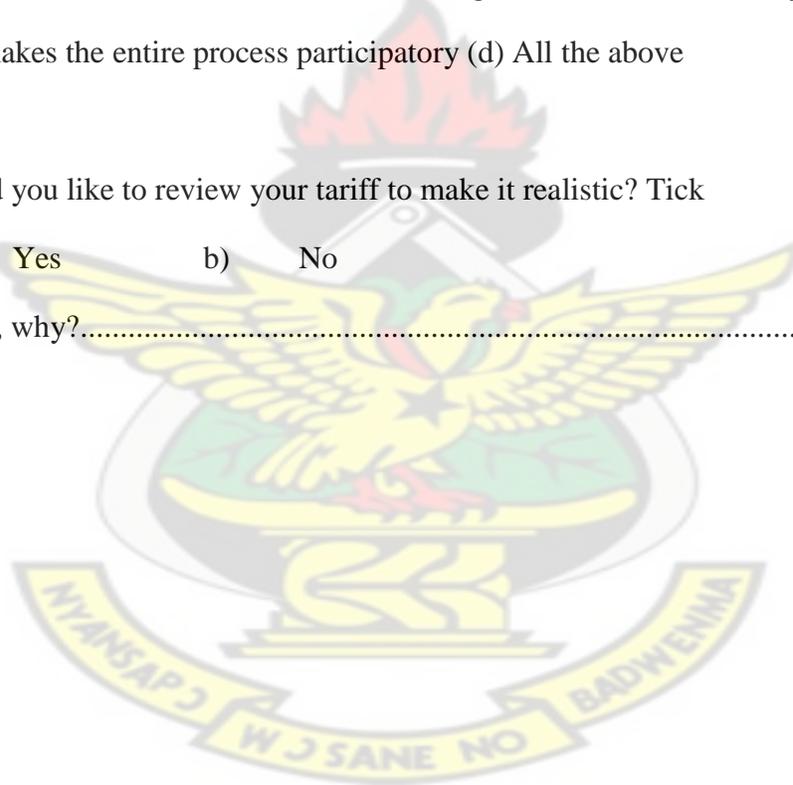
.....

¹ External support organisations could include LG, NGOs, private sector service providers, social enterprises, area mechanics etc – please ensure this is specified in the responses

Section F: Objective 4

To determine enhanced ways of ensuring sustainability of the facilities.

28. At what level do you want to be involved in such interventions?
A) Planning B) Implementation C) Design D) All levels
29. Why will you prefer your choice above?
a) It meets the needs of beneficiaries b) It gives sense of community ownership
c) It makes the entire process participatory (d) All the above
30. Would you like to review your tariff to make it realistic? Tick
a) Yes b) No
If Yes, why?.....



Thank you

APPENDIX C

District Coverage in Water Supply (2009)

DISTRICTS	NO. OF COMM	TOTAL POPULATION	BH	HD W	ST PS	LMS	POPULATION SERVED	COVERAGE
BOLE	151	171,417	153	4	2	0	51,806	72.54
BUNK/YUNYOO	197	127,180	241	2	0	0	71,646	56.33
CENTRAL GONJA	196	94,277	80	25	3	3	38,127	40.44
CHEREPONI	182	65,545	109	35	1	0	37,331	56.95
EAST GONJA	251	120,471	156	22	1	0	56,294	46.73
EAST MAMPRUSI	138	122,956	163	48	2	0	76,644	62.33
GUSHIEGU	315	107,415	284	48	1	4	77,759	72.39
KARAGA	141	73,901	154	31	0	10	43,588	58.98
KPANDAI	227	110,870	183	4	5	0	55,907	50.43
NANUMBA NORTH	188	118,848	248	13	1	0	88,507	74.47
NANUMBA SOUTH	117	76,876	149	3	1	0	54,223	70.53
SABOBA	262	73,041	168	39	1	0	44,296	60.65
SAVELUGU NANTON	132	111,658	253	24	2	6	68,315	61.18

SAWLA-TUNA-KALBA	254	120,877	244	4	1	0	73,881	61.12
TAMALE RURAL	61	32,879	3	8	0	0	2,674	8.13
TOLON KUMBUNGU	255	179,841	178	83	1	5	63,942	35.55
WEST GONJA	111	78,290	182	16	3	0	61,175	78.14
WEST MAMPRUSI	137	153,280	242	114	4	1	100,281	65.42
YENDI	330	122,479	390	16	0	1	94,047	76.79
ZABZUGU TATALE	251	115,984	333	1	1	1	88,631	76.42
TOTAL	3,896	2,078,085	3,913	540	30	31	1,249,074	60.11

Source: CWSA, (2010)

