UNIVERSITY FOR DEVELOPMENT STUDIES

AN ASSESSMENT OF THE TRI-SECTOR PARTNERSHIP MODEL IN PRO-POOR WATER TARIFF COLLECTION AT DALUN, NORTHERN REGION GHANA

BY

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ABSTRACT

Despite the increasing cost of supplying potable water to poor rural communities under Public-Private partnership models, mainstream literature has very little to offer about the effectiveness of these and other emerging models in capacity building projects for local participation in the determination and collection of water tariffs. This study adopted the before-and-after and the cross-sectional study designs to assess the effectiveness of the Tri-sector Partnership model in pro-poor water tariff collection at Dalun in the Northern Region of Ghana. The study covered Dalun Station, Dalun Nayili Fon, and Dalun Kanbong Naa Fon of the Dalun community, which were randomly selected from a list of nine Tri-sector Partnership pilot zones in the area. Data was obtained from administered questionnaires, interviews and discussions, and analyzed with a combination of computer and manual methods. The findings indicated that before the Tri-sector Partnership intervention in Dalun, community participation in water tariff management was informal and about 92% of water tariffs remained in arrears. After the intervention, Community Boards were formed and legally recognized with capacity building initiatives, in partnership with the Ghana Water Company Ltd./ Aqua Vitens Rand Ltd. (as the public sector representative), and the Netherlands Development Organization (SNV) and Pragmatic Outcomes Incorporated (as the private sector partners). The participatory process led to the Water Boards getting involved in tariff determination, meter reading and tariff collection among others. This increased the proportion of collected water bills from 8% before the intervention to 29% after the intervention. Factors like high incidence of poverty and poor motivation of the Water were contributory to the inability to realize better performance. The study concluded that the intervention was not a complete failure. It however recommended the promotion of gender balance in the participatory process, the extension of the membership of the partnership and economic empowerment for sustainable water poverty reduction.

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DEDICATION

Dedicated to my daughters, Afiso Angela Bukari: Eboresama Dorothy Bukari; and Emmanuella Titiaka Bukari

Table of Contents **Page**

CHAPTER 3: METHODOLOGY

CHAPTER 4: RESULTS AND DISCUSSIONS

CHAPTER 5: SUMMARY, CONCLUSION AND RECOMMENDATIONS

List of Tables

List of Figures

List of Plates

List of Boxes

List of Acronyms

AVRL ---------- Aqua Viten Rand Ltd
BPD ----------Business Partnership for Development
CBOs ----------community-based civil society organizations
CJPR ----------Criminal Justice Policy Review
CWB ----------Community Water Boards
CWSA ----------Community Water and Sanitation Agency
CWSD ----------Community Water and Sanitation Department
DERS ----------Department of Environment and Resource Studies
ECG ----------Electricity Company of Ghana
ERP ----------Economic Recovery Programmes
FGD----------Focus Group Discussion
GDA----------Gariba Development Associates

GH¢----------Ghana cedi

Gp ----------Ghana Pesewa

GSS ----------Ghana Statistical Service

GWCL ----------Ghana Water Company Ltd.

GWSC ----------Ghana Water and Sewerage Corporation

IBT ----------Increasing Block Tariff

IMF ----------International Monetary Fund

JICA----------Japanese International Co-operation Agency

JPE----------Journal of Political Economy

LRMC----------Long-run Marginal Cost

MCP----------Marginal Cost Pricing

MDG----------Millennium Development Goal

NE----------New Energy

NGOs ----------Non-Governmental Organizations

NHIS----------National Health Insurance Scheme

PAMSCAD----------Programme of Action to Mitigate the Social Cost of Adjustment

POI ----------Pragmatic Out-comes Incorporated

POO----------Public Ownership and Private Operation

POPO ----------Public Ownership and Private Operation

PGSG ---------- Post Graduate Students' Guide

PPP----------Public-Private Participation

TSP ----------Tri-Sector Partnerships

TWOP ----------Tamale Water Optimization Project

UDS----------University for Development Studies

UN ----------United Nations

WB----------World Bank

WPID----------Wiki Project International Development

WTP---------- Willingness to pay

WVT ----------Water Vision Technology

CHAPTER 1: INTRODUCTION

1.1 Background

The importance of water as the life wire of every community (Bacho, 2001) emanates from the notion that apart from its domestic uses, water is also a major raw material in both small and large-scale industries and so influences the location and localization of industries, as well as the settlement and distribution of population (Osei, 1983; Beaumont, 1993; Hunt, 2004). In view of this, there is the need to manage its availability and equitable distribution for social welfare maximization, and especially, to reduce water poverty (Castro, 2005).

An important contributory factor to ensure the sustained supply of quality potab1e water for human use, is the ability of the supplying agencies to have regular revenue to cover at least, the operational cost of services. However, fulfilling this goal in poor communities (especially in Sub-Saharan African countries) is a major challenge to the public sector, because the low income status affects their ability and willingness to pay (Mu, Whittington and Briscoe, 1990; Cairncross, 1992; Kendie, 1992; Bacho, 2001).

Over the years, the public sector has dominated the ownership and management of water services in developing countries and water "was considered by most Sub-Saharan African governments as a social good which must be provided by central governments to meet the social welfare needs of the people" (Bacho, 2001: 16). The apparent failure of the public sector to meet the everincreasing demand for potable water, due to the inefficiency of public corporation to generate adequate revenue to meet their operational costs (Kendie, 1992), brought about tht adoption of the neo-liberal ideologies initiated by the World Bank and the IMF in the 1980s, leading to the mass privatization of water and sanitation services by most developing countries in the 1990s (Bacho, 2001). There was thus a shift from the Public Ownership and Operation (POO) to the Public-Private Participation (PPP) in the management of the water sector (Nkrumah, 2004; Castro, 2005; WaterAid, 2009). However, the immediate problem associated with the PPP model of water services provision was the inability to meet the needs of the poor, whose conditions continued to worsen due to the profit motives of private sector operations (Bacho 2001). This led to the re-thinking of service provision in a pro-poor perspective.

Currently, the emerging models for developing water systems for the peri-urban and rural poor are shifting away from contracts or the PPP to co-production, creating multi-sectoral consortuims or tri-sector partnerships (TSP) to speed up the delivery and transfer of peri-urban and rural water and sanitation systems (WaterAid, 2006). TSP models are thought of to be capable of bringing about transparency and accountability, which can be built in at all levels of the decision-making process (UN Habitat, 2004). Of major consideration is the need to achieve multiple interests of the stakeholders through the respect for each others' contributions in the decision-making process and more importantly, their implementation. In such participatory models, public-private sector stakeholders would be interested in the returns to their investment, while community-based civil society organizations would be concerned about quality, regular supply and affordable prices of services (Mu, Whittington and Briscoe, 1990). Once their interests have been covered, it would be easy for them to entice other natives to pay for the services. How the issue of poverty can be articulated in this context is a major challenge that stands to be addressed in any pro-poor participatory model.

The concept of community participation is becoming of increasing importance in alternative development paradigms in infrastructure delivery under increasing poverty in developing countries (Bacho, 2001). In response to this trajectory of thinking in water services development, the supply of water in both rural and urban areas have taken various dimensions in Ghana over the years. The Ghana Water and Sewerage Corporation (GWSC) was estblished in 1965 under Act 310 of the parliamentary Acts of Ghana, and given the powers to be the sole producer, supplier, and distributor of potable water in Ghana. It was also to see to the conservation of the nation's water resources for public, domestic and industrial purposes (Saaka *et al.* 2007; DERS, 2010).The GWSC was thus, established as a statutory public utility organization, and contextually portrayed initial public sector dominance or POO in Ghana, and maintained this status until the 1990s. Due to the anomalies that became associated with the POO, such as inability to meet its operational cost, high proportion of leaks and ineffective tariff collection system (Kendie, 1992; Nkrumah, 2004; Castro, 2005), the Government of Ghana, in line with the Structural Adjustment Policies (SAP), decided to disengage itself from the direct provision of potable water- especially as a free commodity (Bacho, 2001). This meant that both urban and rural dwellers had to pay for public water services. Accordingly, in 1991 the

Government of Ghana held a national conference at Kokrobite near Accra, for the development of a sector specific strategy, and by 1996 there was a declaration of the privatization of the GWSC, which was renamed the Ghana Water Company Ltd. (GWCL) (Bacho, 2001; Nkrumah, 2004; DERS, 2010).

In December, 1998, some modifications in the water sector led to the establishmenlt of the Community Water and Sanitation Agency (CWSA) as part of the District Assembly (DA) by an Act of Parliament, 1998 (Act 564) (Bacho, 2001). Under this arrangement DAs encouraged private sector entrepreneurs and non-governmental organizations (NGOs) to participate in community water services by undertaking some of the responsibilities previously borne by the Government (Bacho, 2001; Castro, 2005; Water Aid Malawi, 2008). This spells the origin of the PPP in Ghana. We can therefore deduce from this information that before and during, the 1990s, Ghana experienced the POO (DERS, 2010), and beyond this period, the country has been experiencing the PPP (Bacho, 2001; Nkrumah, 2004; Castro, 2005).

The PPP in the context of this study, is looked at in two phases: the typical PPP involving public and private sector organizations without formal community-based civil society participarion; and the PPP with formally incorporated local civil society participation (especially in poor communities). The latter thus constituted the TSP. This gained roots in Ghana when on 22nd November, 2005, the GWCL on behalf of the Republic of Ghana signed a five year management contract with Vitens Rand Water Services BV of The Netherlands- a consortium of Viten International BV of Royal Netherlands and Rand Water Services Pty of Souti Africa (Department of Environment and Resource Studies-DERS, 2010). The contract commenced on 6th June, 2006, with Aqua Viten Rand Ltd (AVRL), which is a subsidiary of Viten Rand Water Services BV providing managerial expertise and was thus, responsible for the general management of the operational activities of the company involving the maintenance of delivery components, billing and tariff collection and all customer related issues (DER , 2010). Specifically, the Government of Ghana still remained the asset owner in the company. This change of service delivery model involved a transition from the POO- as the case was under the GWSC, in which water was virtually free, to Public Ownership and Private Operatiorr (POPO),

(Castro, 2005)- as the case was under the GWCL/AVRL, where cost recovery has become the order of the day.

Mainstream literature on the TSP as a component of the PPP is mainly on proposals or model development rather than reports on progress; no edequate indications of the processes and procedures carried out, what worked and what did not. This study has examined how public and private sectors are assisting local communities to obtain adequate, quality and regular supply of water, and the various attempts to make the supporting process sustainable through the involvement of beneficiary communities in the management of revenue generation to ensure reasonable returns to investment (Bacho, 2001; Nkrumah, 2004).

Since service quality is a major determinant of interest in a project on willingness to pay (Munasinghe, 1992), in Northern Ghana the Tamale Water Optimization Project (TWOP) involving the rehabilitation and extension of water infrastructure was initiated in 2006 (SNV, 2007) and funded by Vitens Rand Water Services BV of The Netherlands with an amount of £45,000,000. The contract was awarded to Biwater Ltd. (a British private sector company). Community participation in the management of the water system was also initiated as a donor conditionality to be a component of the TWOP. This was to ensure collective action through a TSP approach in low income communities, and was commenced with a pilot project in the Dalun-Tamale corridor (made up of villages between Dalun and Tamale, through which the main water delivery pipe line passes).

In the case of Dalun, the tri-sector partners were the GWCL/AVRL as the public sector and the Netherlands Development Organization (popularly known as SNV) as the private sector which was initially brought in to coin the community participation component. SNV also involved some local private sector development actors to help establish and design the operational activities of the community-based structures or Water Boards (Civil Society) in thhe pilot communities as a pilot project for the year 2007; these included Pragmatic Out-comes Incorporated (POI), Gariba Development Associates (GDA), New Energy (NE) mid Water Vision Technology (WVT) (TWOP Report, 2007/2008; SNV, 2007/2008). In particular, the influence of the activities of POI on the Dalun Water Board was of interest in this study.

The roles played by the public-private sector organisations in the incorporation of the Community Water Boards in the tariff collection and other responsibilities included first; the drawing of agreements on defined roles of all the partners or stakeholders. The GWCL/AVRL remained the asset owner and the key player in water systems management as its tradtitional roles. Under the TSP, the GWCL/ AVRL, was to identify and diagnose the challenges it faced in dealing with pro-poor tariff collection, enter into agreement with the private sector organisations on the establishment or rehabilitation of Community Water Boards (CWB) and their defined roles, as well a collective responsibilities in systems management and tariff collection, and more importantly the readiness of the GWCL/AVRL to recognise and appreciate the presence and contributions of the CWBs, through healthy communication linkages (TWOP / Report, 2007/2008; SNV, 2007/2008).

The private sector organisations were to assess the existence and functions of previous community-based civil society organizations (CSOs) in the water sector in the pilot communities, and where they did not exist new ones were created and identified as CWBs. These were then trained in areas of participation in tariff determination, meter reading, distribution of water bills, effective tariff collection methods, record keeping and accountability to the service provider (Munasinghe, 1992; POI, 2008; SNV, 2007/2008). It was expected that this participatory process could help develop positive attitudes towards community willingness to pay for water and other aspects of water use behaviour (Kendie, 1992; Munasinghe, 1992) through education and the demystification of the traditional notions of water. It is now worth assessing the effectiveness of this participatory model.

Community participation in water tariff collection has yielded positive results in some parts of Africa, while other models involving shifts from POO to PPP without community Participation but with cost recovery have generated violent reactions from the people in other parts of the world (Zibechi, 2008). The Lilongwe Water Board in Malawi for instance, is the sole public sector water supply authority. With the apparent realization of the short-falls of the POO, the Board now engages political and traditional leaders to manage kiosk committees at various zones, who are responsible for water tariff collection. The Board also works in partnership with a local non-governmental organization- the Center for Community Organization and Development (CCODE). The partnership plans for the sustainability, efficiency and transparency in the

provision of safe, affordable and reliable water supply to informal settlements (Water Aid Malawi, 2008).

Though the participatory process yielded positive results in terms of tariff payments, challenges such as corruption on the part of some committee members were encountered. On the other hand through the water war of April 2000, the poor of the city and countryside of Cochabamba, succeeded in expelling a multinational corporation which tried to charge them for this most basic good (water). Between 2003 and 2005, the poor of the entire country drove out the neoliberal model of water management. Now it is community management of water that is the uresolved challenge (Zibechi, 2008). A detailed study of a situation in a specified area is therefore necessary for the assessment of the community participation argument.

The water supply system of the Dalun-Tamale TSP Corridor depends on fresh water drawn from a dam at Nawuni which is about 40km north-west of Tamale and then stored and treated from a reservoir at Dalun, from where it is distributed to supply outlets through transmission mains and distribution valves (TWOP Report, 2007). This study examined on one hand, how the involvement of the private sector could meet the expectations of the low income people, and on the other, the interest of the interventionists through the TSP participatory model in terms of catering for the heavy investment cost in water infrastructure and tariff setting (Munasinghe, 1992).

Pro-poor service delivery in the project implies that the study was interested in the special provisions for the supply of water to the beneficiaries with some favorable terms in view of their socio-economic background. Usually such provisions may include: the use of public stand pipes instead of private connections (this ensures cost sharing in terms of water bills and maintenance) and tariff rates are relatively lower (SNV, 2007/2008). Also issues of high level of wastage of water at the facilities and illegal unbilled connections resulting into high losses of water revenue (non-revenue water) compared to investment cost, are common in poor communities with the main source of water for the service provider as their environmental resource, and traditionally see it as free natural gift (Munasinghe, 1992; SNV, 2008; Water Aid Malawi, 2009).

Bacho (2001: 16) notes that *"unlike urban water supply systems that benefit from economies of scale, in rural community water supply programmes there are complex problems ranging from technical feasibility, cost effectiveness in providing water for scattered populations and the operations and management on a continuous basis".* This research was therefore to examine how the TSP identified and incorporated these problems into their objectives and how far they have been able to fulfill them. This was facilitated by a *before-and-after* study design, in which the year 2006 was taken as the period immediately before the intervention and 2008 as the period after the intervention. The justification is that 2007 was the time the community Water Boards were receiving training, while 2008 was the time the community ownership of the water system was initiated through the commencement of the operations of the Water Boards, and the public-aprivate partners were supposed to monitor their activities (SNV, 2007 /2008).

According to Castro (2005), inadequate use of theories in water related studies impedes the systematic development of knowledge in the sector. This study has therefore been guided by the Rothman's Community Organising Model (Rothman, 1968) and other theories that facilitated an organized examination of the participatory approaches adopted in the TSP, as well as the measurement of attitudinal or behavioural variables that influenced the willingness of beneficiaries to pay for water .(See Munasinghe, 1992). The study examined the weaknesses of earlier models in terms of service quality and tariff collection that brought about the need for paradigm shift to the TSP, how the pro-poor water tariff collection process was facilitated under the TSP and the associated achievements in water tariff collection, as well as the effects on the quality of services. The study then moved on to identify the gaps in the TSP model and came out with modifications for a better way forward.

1.2 Statement of the Research Problem

Despite the importance of public sector involvement in the supply of potable water at increasing operational costs to both rural and urban areas, the issue of effective collection of water tariffs still remains a major challenge in the extension of services to poorer communities. Though new models such as the TSP are emerging to offer solutions to the problems, mainstream literature on pro-poor water services has very little to offer on the effectiveness of such models.

The need for the assessment of water delivery models with a pro-poor inclination is necessitated by the fact that there have been changing trends in the expectations of the poor under the various service delivery models (the PSP, PPP and TSP). Of particular interest in these expectations in this study is the issue of tariff determination and collecton. The considerations for the pricing of potable water by the PPP component of a TSP model include raising sufficient sale revenue to meet operational cost and debt service, while providing reasonable contribution towards the capital requirement for future systems expansion. The need to partner with CBOs would therefore depend on how their interests are successfully articulated to meet these objectives (Munasinghe, 1992).

In the case of the TSP in Dalun, the relationship between cost and water pricing is a compound issue. This is because the area is only experiencing an extension of metropolitan water services (Tamale Metropolis), such that a marginal cost pricing policy would have to be based on the total metropolitan investment cost. Thus, given the pro-poor nature of the TSP, how fair was the cost allocation in terms of differences in income among the service areas and burden imposed on the system? What provision was made for minimum level of service to meet the basic water needs of persons who cannot afford the full cost? What collaborative efforts were made to ensure that the adopted tariff policy would lead to effective collection and ability to pay to sustain services? (Munasinghe, 1992). Furthermore, by stereotyping the beneficiaries of the TSP pro-poor water project in Dalun as *poor,* was the project just to create favourable terms through reduced tariffs and then building the capacities of the Community Water Boards to collect such low tariffs for water revenue losses? Finally, how long would it take to attain cost recovery in pro-poor services if the root causes of poverty in beneficiary communities remain unattended to?

In the context of pro-poor services, one of the immediate answers to these questions include the assessment of the proportion of household income poor communities are willing to spend on improved water services (Alexander, 1993); another is by the involvement of the community Water Boards in pro-poor water tariff rate setting (Kelly et al, 2001); and a third is the involvement of the community Water Boards in the distribution and collection of water tariffs (Water Aid Malawi, 2008).

On the other hand, whereas mainstream literature on the emerging TSP models either indicate how these models provide affordable water services to the poor, or how they are reducing the root causes of poverty as two independent activities (JICA, 1997), there is no obvious coverage of how poverty reduction strategies are deliberately juxtaposed with building the capacities of the poor to meet the full cost of public water services. In this way, the question still remains, that if private sector stakeholders in public water services in this era of water privatisation in developing counties, will not stop referring to the inability of the poor to make adequate payment as a constraint to the profitability of the water sector, then when will the concept of water poverty come to an end in any progressive development paradigm? This study did not only investigate the activities of the TSP in Dalun to measure the extent of the practicability of these views and how results met expectations, but also attempted to answer the unanswered question.

This thesis therefore sought to address the persistence of poor water tariff collection after the adoption of Public-Private Partnership due to poor community participation, and how the TSP served as a better alternative and attempts made to fill the identified gaps.

This was facilitated by finding answers to the research questions and measuring the achievement of the associated objectives as given below.

1.3 Research Questions

Research questions are questions that a researcher would like to answer through a study (Kumar, 1999). They are necessary because they aid in addressing the research problem. In this study, there was a major or over-arching research question, which aided in arriving at the conslusion for the study by simply answering it (Shani, 2008). It was followed by the specific research questions which contributed up to the major one.

1.3.1 Major Research Question

How do changes from Public-Private Participation in water services delivery to Tri-Sector Partnership model affect pro-poor water tariff management?

1.3.2 Specific Research Questions

i. What were the earlier models used in community water services?
ii. How have earlier models performed in community water tariff collection?
iii. What factors accounted for the formation of the TSP in pro-poor water tariff management?
iv. How was the pro-poor water tariff collection process facilitated under the TSP?
v. What achievements were made by the TSP, over previous models in terms of water tariff collection?
vi. What were the gaps in the TSP model in pro-poor water tariff collection?
vii. What is the way forword after the TSP?

These questions provided answers for the measurement of the research objectives below.

1.4 Research Objectives:

According to Kumar (1999:39), "Research objectives are the goals you set out to attain in your study". The purpose is to inform the reader about what a researcher wants to achieve in a particular study. Thus, this study had a major objective, which aided in presenting a vivid picture of what the study achieved at the conclusion stage. This was followed by the specific objectives, which contributed to the achievement of the major one.

1.4.1 Major Objective

To determine how changes from Public-Private Participation in water delivery to a Tri-Sector Partnership model affect pro-poor water tariff management

1.4.2 Specific Objectives

i. To identify the models used in community water services before the TSP
ii. To assess the performance of earlier models in community water tariff collection
iii. To ascertain the factors that accounted for the formation of the TSP in pro-poor water tariff management

iv. To examine how the pro-poor water tariff collection process was facilitated under the TSP

v. To assess the achievements of the TSP in the pro-poor water tariff collection

vi. To identify the gaps in the TSP model in pro-poor water tariff collection

vii. To make modifications to the TSP model for the way forward

• Verification of Logical Relationships between the Research Objectives

An examination of the research objectives above reveals a logical flow of relationship between them (UDS-PGSG, 2008): for there can be no perfect assessment without an evaluation of ealier models. On the basis of the evaluation for feed-back, one can then understand the factors that led to the new model (TSP) as a review of the previous situations. Again, once the new model was implemented, it became necessary to examine how it operated, in order to bring its efficiency or otherwise to light as an assessment. The critical assessment facilitated the identificatiors of some gaps (Kumar, 1998), and a way forward proposed to overcome the challenges of the TSP.

For analytical purposes, the research objectives were framed into analytical themes, under which sub-sections were created in accordance to the various questions asked, and the answers found for the measurement of each objective.

It is expected that the outcome of this study would be of benefit in various respects as considered under the justification for the study below.

1.5 Justification for the Study

This study examined the multiplicity of participating units, drawn from the public, private and civil society organizations, in a pro-poor service delivery model, and sought to assess this alternative model in terms of how the performance of the PPP could be influenced when community participation is also incorporated, especially in the mobilization of the local people for water tariff payment. The model that has been assessed was thus the Tri-sector Partnership (TSP) model of pro-poor water services.

The justification for this study is that it established the much needed linkage between theory and practice (Bacho, 2001), in relation to the applicability of the new emerging model of pro-poor water services, namely the TSP. In one respect, this study was new in view of the fact that the activities of the TSP itself are new in the geographical context of this study; and in another, the available research findings on tri-sector partnership operations in the water sector are scanty, or information on the issue are largely theoretical by nature and mostly existing in the form of professional recommendations, perhaps due to the freshness of the TSP model in pro-poor water services in the global perspective (Castro, 2005). Thus this study provided an avenue for the partners of the TSP in Northern Ghana to assess themselves, as well as filling the gap in the existing body of knowledge on the practical experiences of the strengths, weaknesses, opportunities and threats of the TSP in pro-poor water services in developing countries. Further more as an assessment of a pilot intervention in pro-poor utility service provision, the results of this study reflected the level of social welfare maximization as perceived by the beneficiaries in the face of increasing water tariffs, in comparison to previous service delivery models that were characteristically top-down in nature (Bacho, 2001).

The findings of the research can therefore pave the way for the realization of the way forward after the Dalun-Tamale Corridor experience, to explore other potential applications of collectivity beyond water tariff collection, in a broader spatial perspective (from the corridor to the whole of Northern Region and the rest of the country). Finally, the study could also pave the way for further research in related fields of study, and the findings could be of academic relevance to students of water resource related disciplines, through the organized and documented information as described below.

1.6 Organization of the Chapters

The thesis was written under five chapters. Chapter one (1) is the introductory chapter. Chapter two (2) contains the Literature Review, while chapters 3 and 4 presented the Methodology and Results and Discussions respectively. The work was completed with the Summary, conclusion and Recommendations as chapter five (5), followed by the References and Appendices.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

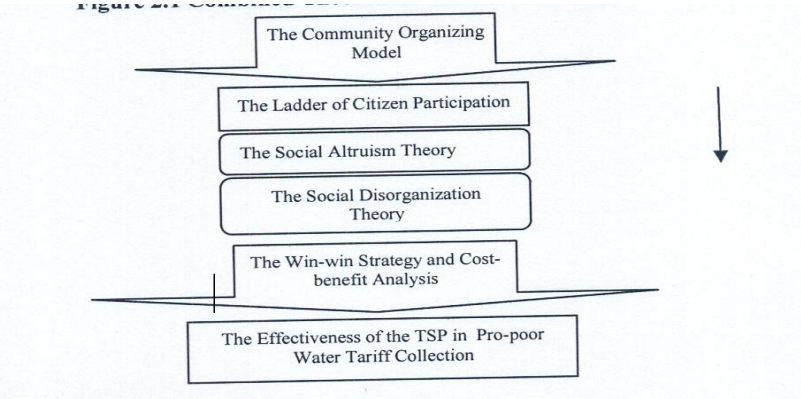
Literature review is a compilation of documentations about the research problem (UDS-PGSG, 2008). This is to acquaint the researcher with the available body of knowledge on the research problem in order to bring about clarity and focus, improve upon the adopted methodology and broaden the researcher's knowledge base in the research area (Kumar, 1999). A funnel approach was adopted, by looking at related issues from the glogal to the regional levels and gradually narrowed down to the local situation. The chapter starts with frameworks of theories and concepts, and then adds some documented information on the analytical themes. The challenge for further research posed by the literature has also been indicated where applicable.

Furthermore, the reviewed literature served as the tachometer for the measurement of the accuracy of the results of this study (Kumar, 1999).

2.2 Theoretical Framework

Twumasi (2001:10), defines a theory as "a coherent group of general propositionr used to explain phenomena". A theoretical framework on the other hand, is the foundation and structure, or scaffolding of your study (Yin, 1993), and can be considered as a 'lens'. This means you can take a theory and design a study based on the tenets of the theory. This enables a researcher to get what he/she wants. Like Yin (1993), Twumasi (2001) also adds that a social scientist needs a body of theory to construct his research model and to guide his analysis, in other words theories are to thesis what clutches are to a cripple (Shani, 2008). Hence in this study, some major relevant theories of participation have been selected and used as a framework to guide the assessment of the TSP model in pro-poor water tariff collection. Modifications have however been introduced in some of the theories to suit the enquiry (Kane, 1995). ~igure 2.1 presents the theoretical basis of the study. It shows the descending order of importance of the various theories used and how they collectively aided the assessment of the effectiveness of the TSP model, hence the downward direction of the arrow.

Figure 2.1 Combined Theoretical Bases of the Study



Source: Self designed

The sections below present a detailed discussion of the theoretical framework presented in figure 2.1.

2.2.1 Community Organizing Model

The community organizing model is a model of practice most commonly associated with North American approach to community organization for participatory development (Smith, 2006). Here the work of Rothman (1968) is of special importance.

Rothman (1968) identified three distinct types of community organization, namely Locality Development, Social Planning and Social Action.

Locality development

This typifies the methods of work with community groups used in community development work. A major focus is on the process of community building (Rothman, 1968). Working with a broad, representative cross-section of the community, workers attempt to achieve change objectives by enabling the community to establish consensus via the identification of common interests. Leadership development and the education of the participants are important elements in the process. In this approach great store is set by the values of both participation and leadership (Smith, 2006).

This aspect of the model was used to guide the assessment of the initial relationship between the community and the public sector under the POO before the TSP, and public-private sector partners of the TSP. The initial processes involved obtaining information on earlier models of water services and how they faired, followed by the move for change by the initiation of the TSP and the formation and capacity building of the community Water Boards and leadership development issues (Smith, 2006), to meet the collective interests of the community and the public-private sector partners of the TSP in a manner that built upon the trusts of all parties in this approach. Locality Development was particularly applied to objectives 1 and 2, and was backed by the stage of Citizen Non-Participation of the Arnstein's Ladder (arnstein, 1969) and the theories of Social Disorganization and Social Altruism considered in a later part of this section.

Social planning

This approach gained greater recognition and application to broader areas including city planning and other aspects of social services provision in 1960 (Smith, 2006). Effort is focused primarily on task goals and issues of resource allocation (Rothman, 1968). Whereas the initial emphasis of this approach was on the co-ordination of social services, its attention has expanded to include programme development and planning in all major social welfare institutions. Heavy reliance is placed on rational problem solving, and expertise is the cherished value in this approach, although leadership is accorded importance as well (Smith, 2006). There is considerable overlap between the elements - but the focus on difference is useful in that it points attention to dimensions such as process, the role of the plan, and the tension between the state and dominant groups and those who believe themselves to be excluded (Smith, 2006).

This study adopted the social planning approach to investigate how the use of expertise in the private sector for fleshing out the effective community participation process, helped to stimulate positive attitudes at Dalun for willingness to pay for water services. Attention was given to participatory processes that took into consideration the low income status of the beneficiaries as the major characteristic of a pro-poor service delivery model, and exactly how this was being implemented with the involvement of the poor, especially in tariff determination (Munasinghe, 1992). In other words issues of collective decision-making and the participatory processes

involved towards the meeting of task goals (Smith, 2006), were better looked at under this approach. With a blend of the aspects of *tokenism* in the *Arnstein's Ladder* (Arnstein, 1969), this study examined how the participatory planning process led to the satisfaction of the interests of all parties of the TSP in the tariff management process. These were used in the measurement of objective 4 alongside the Win-win Strategy and the qualitative aspects of the Cost-Benefit theory.

Social action

This is employed by groups and organizations which seek to alter institutional policies or to make changes in the distribution of power (Rothman, 1968). Civil rights groups and social movements are examples. Their methods may be, and often are, abrasive, and participation is the value most clearly articulated by those who use this approach. Both leadership and expertise may be challenged as the symbolic 'enemies of the people' (Smith, 2006).

This approach was used as a basis for examining how the Water Boards and interventionist agencies arrived at consensus on water tariff issues, and how partners played their roles for effective tariff collection in the study area. An examination of the roles of the service providers in terms of the incorporation of the collective agreements into the actual water bills issued, in a manner that reflected change in the meeting of the needs of the poor (Smith, 2006); period of distribution of the bills; and issues of commissions for dedicated Water Board members were considered. Also, the approaches adopted by the Water Boards in the tariff collection process, and the effectiveness or otherwise of the process, especially in terms of inducing the citizenry in the prompt payment of tariffs were part of the objectives in the use of this approach. The approach was combined with relevant aspects of the stage of *citizens power* of the *Arnstein 's Ladder* (Arnstein, 1969), to measure the fifth objective of assessing the actual activities and effectiveness of the Water Boards in the tariff collection process.

The Rothman's model is however not without weaknesses. An examination of the main theory on which the analysis of the findings of this research were based that is the *Rothman's Community Organizing Model* (Rothman, 1968), shows that the theory is based on the premise that instead of seeking to help deprived communities to improve their social and environmental

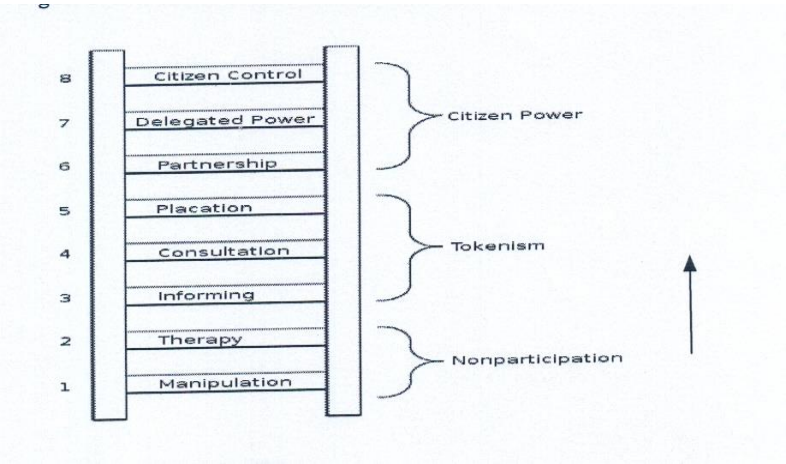
circumstances, the new community work activists argue that people take direct political action to demand changes and improvements (Midgley et al, 1986).

Also, the processes involved in this model were originally arranged as locality development, social planning and social action; this has some logical problem since we plan before embarking on actions or implementations (Botchwey, 2006). Hence, the arrangement has been modified with the intention to look at social planning before social action as above. Furthermore, the processes make the theory very general in context and raises as many questions as it answers. As with other traditions of community intervention, the theoretical base for the work is relatively patchy (Abbott, 1996). There are contextual and specific problems within different societies. However, available documentations seem to offer very little about practical results, and merely display practicable wisdom of community organizational skills. These problems have been catered for in this study through a focus on an identified society, certainty of area of application, and specificity of purpose by focusing on defined objectives. The strengths and weaknesses of the TSP organizations were therefore identified in a systematic way to inspire policy redirection through the outcome of the participatory process.

2.2.2 The Arnstein's ladder of citizen participation

The Arnstein's Ladder of Citizen Participation is about power structures in society and how they interact. Specifically, it is a guide to seeing who has power when important decisions are being made (Amstein, 1969). The tenets of the ladder are arranged in an ascending order as indicated by the arrow in figure 2.2.

Figure 2.2: Arnstein's ladder of citizen participation



It is one of the important theories to consider when dealing with issues of participation. The model has eight rungs as shown in Figure 2.2.

The Stage of Citizen Non-participation

The bottom rungs of the ladder are (1) Manipulation and (2) Therapy. These two rungs describe levels of *"non-participation"* that have been contrived by some to substitute for genuine or popular participation (Arnstein, 1969; Midgley et al, 1986; Millar, 2007). Their real objective is not to enable people to participate in planning or conducting programs, but to enable power holders to "educate" or "cure" the participants (Arnstein, 1969).

This stage of the Arnstein's Ladder (Arnstein, 1969), were of significance in the measurement of the preliminary phases of the first objective or analytical theme, which is about *earlier models of water delivery services before the TSP.* This started from the initial point of contact with the Dalun community in the Dalun-Tamale Corridor by the public-private partners of the TSP, and was used to support the stage of *locality development under the Rothman's Community Organizing Model* (Rothman, 1968).

The Stage of Tokenism

Rungs 3 and 4 progress to levels of "tokenism" that allow the have-nots to hear and to have a voice: (3) Informing (4) Consultation and (5) Placation (Arnstein, 1969). When they are proffered by power holders as the total extent of participation, citizens may indeed hear and be heard. But under these conditions they lack the power to insure that their views will be needed by the powerful. When participation is restricted to these levels, there is no follow-through, no "muscle," hence no assurance of changing the status quo (Arnstein, 1969). Like other stages of the Arnstein's ladder, stages 3 and 4 do not tell us what exactly goes into the information and consultation processes. Hence, this study shall flesh out the actualization of the concepts of *participation by consultation* and *information giving* (Kane, 1995; Millar, 2007; Hamad, 2008). Placation is simply a higher level tokenism because the ground rules allow the have-nots to advice, but retain for the power holders the continued right to decide. Placation however had the

potential of bringing about a compromise through *a win-win strategy* (Botchwey, 2006) among the TSP partners.

The Stage of Citizen Power

Further up the Arnstein's ladder (Arnstein, 1969) are levels of citizen power with increasing degrees of decision-making clout. Citizens can enter into a *Partnership* that enables them to negotiate and engage in trade-offs with traditional power holders. At rungs 7 and 8 of the ladder, we have *Delegated Power* and *Citizen Control.* Here the have-not citizens obtain the majority of decision-making seats, or full managerial power. At the stage of delegated power, negotiations between citizens and public officials can also result in citizens achieving dominant decision-making authority over a particular plan or program. At this level, the ladder has been scaled to the point where citizens hold the significant cards to assure accountability of the program to them. To resolve differences, power-holders need to start the bargaining process rather than respond to pressure from the other end. At the stage of *Citizen Control,* people are simply demanding that degree of power (or control) which guarantees that participants or residents can govern a program or an institution, be in full charge of policy and managerial aspects, and be able to negotiate the conditions under which "outsiders" may change them.

The stage of citizen power comprising partnership, delegated power and control (Arnstein, 1969), was used alongside the social Action Approach under the Rothman's model (Rothman, 1968). These together facilitated the measurement of the third objective of *assessing the achievements of the community Water Boards in the tariff collection process.*

A critical examination of the *Ladder of Citizen Participation* (Arnstein, 1969), shows that it is about power structures in society and how they interact. Specifically, it is a guide to seeing who has power when important decisions are being made. Unfortunately, at the stage of *manipulation,* this chicanery is not a unique example. Instead it is almost typical of what has been perpetrated in the name of high-sounding rhetoric like *grassroots participation.* Also, at the stage of *information giving,* lack of understanding by the local people of the real objective of the intervention could lead to the provision of information that could later be to their disadvantage (Rue, 2004), and also obstruct their ability to identify proposed options in the project agreement

that might not possibly exist. A classic misuse of the *consultation rung* could also occur when power-holders meet project beneficiaries only after proposals have already been prepared (Smith,2006). Among the arguments against the stage of *community control* are: it supports separatism; it creates balkanization of public services; it is more costly and less efficient; it enables minority group "hustlers" to be just as opportunistic and disdainful of the have-nots; it is incompatible with merit systems and professionalism (Smith, 2006).

It is obvious that the critiques associated with the Ladder of Citizen Participation have arisen because of lack of specificity in its application in community participation. To make a sound assessment of the effectiveness of the various rungs of the model, this study applied them to a defined geographical area, with an identified intervention project within the water sector, and with known players of the participatory process. This facilitated the discovery of the various gaps in Arnstein' s model and self initiatives adopted to fill those gaps for the measurement of the efficacy of the various aspects of the TSP model in the context of well defined objectives, to see what works and what does not.

2.2.3 Social Altruism Theory

The Social Altruism Theory has it that, the ratio of tax deductible contributions to the total number of returns is positively related to violence, and to a lesser extent property crime rates (Criminal Justice Policy Review (CJPR), 1999). This theory simply reveals that taxation is a form of community participation in development, and that when individual tax contributions for community or social development is perceived to be high compared to the level of satisfaction from the services such as potable water, this manifests itself in adverse forms such as if creasing property crime rates. To reduce the adverse effects of taxation, this theory presupposes that a tariff policy should be consistent with the ability to pay.

The limitation of the *social altruism theory* is that, it assumes crime rates continue indefinitely if tax deductible rates exceed societal expectation in relation to the use of public utility services, and thus undermines the possibility of the involvement of the tax payer in the determination of tax, or the nature of the service provided.

The simple fact is, a tax burden on the poor worsens the incidence of poverty, and this would manifest itself in the form of aggressive reactions by the poor (Zibechi, 2008). This theory was used in the examination of the people's water use behaviour in terms of their attitudes towards payment of water bills as a response to tariff rates and how the TSP was able to address this through community participation in tariff determination and collection.

2.2.4 The Social Disorganization Theory

The general hypothesis under the Social Disorganization Theory is that low economic status, ethnic heterogeneity, residential mobility, and family disruption lead to community social disorganization, which, in turn, increases crime and delinquency rates. A community's level of social organization is measured in terms of local friendship networks and prevalence of organizational participation (Byron and Robert, 1989). Results from surveys support the theory and show that between-community variations in social disorganization transmit much of the effect of community structural characteristics. In other words when a community has many social structures that promote social coherence, it is likely to be more organized than one in which freedom of association is limited. Even when such participatory associations exist, the legitimacy in terms of wider social recognition and tolerance is highly significant.

Apart from the fact that the *Social Disorganization Theory* has no scientific validation (as it remains a hypothesis), it is too broad in scope for the purpose of this study. This theory contributes to community participation, and was used to enhance explanations under various aspects of the locality development, social planning and social action as the various modes of community participation reflected themselves.

Here, the desired impact of social organization measured was how the beneficiaries of a pro-poor water delivery service in a community, were compromising with the participatory structures formed with their own representatives; and also how service provision interventions articulated the economic status of beneficiaries, with the cost- efficiency motive.

2.2.5 The Win-Win Strategy

The win-win strategy is a negotiation skill for community Development, which works towards a situation where all parties achieve outcomes that are satisfactory to them (Botchwey, 2006). This strategy is a collaborative style of negotiation that facilitates a good relationship between the parties as "a higher priority than the outcome of the process" (Botchwey, 2006:54). The over-riding objective of parties in a win-win strategy is for a peaceful relationship. Parties usually have common interests, and do not have the intention to take entrenched positions (Botchwey, 2006). This tool of negotiation was relevant at the stage of social planning, where intensified components of community participation were considered, such as issues of collective determination of pro-poor water tariffs under the TSP.

2.2.6 The Cost-benefit Analysis Theory

The combination of central planning with market economic practices means that development interventions in third world countries are never without expected gains. Before any project is formulated for implementation in partnership between the public, private and civil society organizations, negotiations are entered into, based on a win-win strategy approach, such that all parties achieve outcomes that are satisfactory to them (Botchwey, 2006). With this background, the willingness of parties to participate (especially profit oriented private sector entrepreneurs) may then be based on a cost-benefit analysis. The basic idea of the cost benefit analysis theory is that, to decide on the worth of projects involving public expenditure, it is necessary to weigh the advantages (benefits) and the disadvantages (costs) to society as a whole (Todaro and Smith, 2006). This is to neutralize any friction between the commercial profitability orienitations of private entrepreneurs and public investment decisions aimed at welfare maximization. Thus, in pro-poor water delivery services, an increase in public water tariff without the prior notification of the local political authorities and/or civil society organizations could lead to conflict and non-cooperation.

The immediate resolution could be an application of a community development negotiation approach, such as the Win-win strategy (Botchwey, 2006), in which parties might be satisfied with conditions that meet their individual interests. The issue of interest in the context of the relationship between the public and private sector interventionists and the civil society

organizations, is how the two sides could equate their cost recovery inclination or cost-benefit orientation (on the part of the former), with low cost but high welfare maximization (on the part of the latter).

It must however be acknowledged that the mathematical complexities involved in the measurement of cost recovery (as in cost-benefit analysis) are beyond the scope of this study. Because the approaches adopted here are mainly to make institutional and attitudinal/ behavioural assessments (social benefits), which cannot be quantified (Munasinghe, 1992).

Also, the study area is only a small fragment that is dependent on a metropolitan water delivery infrastructure, such that determining investment cost could be misleading on the basis of misrepresentation.

2.3 Conceptual Overview

A research work of this nature involves the use of several organized ideas, values, definitions and assumptions, which should be expressed in such a way that they make the communication of the research findings easier to others (Mujer Sana Comunidad Sana Project Report, 2003). Concepts are therefore mental images or perceptions, and so their meanings vary from one person to another (Kumar, 1999).

In this study, the conceptual overview has been constructed from key concepts derived from the model under study (TSP) and the major analytical theories, and their operational definitions and proposed applications discussed (Kumar, 1999). This helped the researcher to explain why certain things were done the way they were done, so as to help others understand and use the ideas of this study in similar fields of application.

2.3.1 Potable Water

In the context of development, the provision of water of sufficient quantity and quality aims at promoting an acceptable standard of living (WikiProject International Development (WPID), 2008). Potable water provision is therefore an issue of global concern. According to the GWSC, *"Potable water is water that is different in terms of its source and condition, from water that is obtained from natural sources such as rain, rivers, dams and ponds. It is obtained through the application of technology and is free from contamination or disease and so good for human use'' (*GWSC, 1969: 35; as in Bacho, 2001). In other words, potable water is water of quality such

that it does not cause ill-health either by transmission of disease causing organisms or by its excessive chemical content (GWSC, 1969). The important nature of quality drinking water for survival, vis-a-vis the problem of affordability in developing countries compelled most governments to consider it as a social responsibility of the state in the past (Bacho, 2011). The opportunity cost of such social welfare services apparently became unbearable with the adoption of the ERS and SAPs. The accessibility to potable water among other social goods contributes to indicators of poverty in rural areas of third world countries. This study has examined how cost recovery drives of PPP models are rethinking water supply services with pro-poor rhetoric, and how community participation could be of relevance in the determination of user capability and willingness to pay.

2.3.2 Pro-poor Water Services

Poverty is the condition of lacking economic access to fundamental human needs such as food, shelter and safe drinking water. While some define poverty primarily in economic terms, others consider social and political arrangements also to be intrinsic - often manifested in a lack of dignity (Wikiproject International Development, 2008). Botchwey (2006) sees poverty as a condition of lack that engulfs the entire human person. Other conditions of poverty include lack of voice and non-participation. The notion of poverty however varies from country to country and region to region, reflecting itself in physiological, social and economic requirements. The above notions of poverty find relevance in the Ghanaian context; according to the GPRS (2002 - 2004) the three northern regions of Ghana (Northern Region, Upper East and Upper West) have the highest incidence of poverty. However, the people of Northern Ghana associate poverty with inadequacy of potable water among other indicators, while their counterparts in Southern Ghana measure poverty from accessibility to education and basic infrastructure (GPRS, 2002-2004).

Water poverty is an issue of universal concern, and its reduction is contributory to meeting the first of the Millennium Development Goals (MDGs), (Castro, 2005). In the 1990s, initial advances to promote PSP did not include extension of services to the poor (Castro, 2005). This was because the PSP operates under complete liberal conditions (Alan and Allen, 2000; Castro, 2005) where services are purely demand driven (Bacho, 2001) with a major motive of profit maximization. However, public sector activities in potable water services have existed in various

forms over time (from POO to PPP or POPO, and now the TSP). Of particular interest in the public sector services is how paradigm shifts affect the welfare of the poor in terms of affordability and sustainability of services. Because of the diversity of emerging PPP models involved in water provision - such as lease, management contracts and co-production (Castro, 2005) and the diverse nature of users in terms of income stratification, policies need to be based on a real understanding of the local context so that they truly contribute to meeting the basic needs of the poor. This may require more in-depth assessments of the needs of poor communities, as well as the recognition and involvement of a wider range of actors and service delivery arrangements under a pro-poor governance framework. Some panelists at a UN sponsored workshop on water and sanitation services for the poor cited certain principles for good governance under PPP pro-poor service, such as appropriate regulatory and tariff structures (UN Habitat, 2004).

The significance of the paradigm shift from the more centralized POO to the PPP and the TSP as market oriented or liberal systems on the rural poor is worth looking at (Bacho, 2001). In other words are the poor just seen as customers who must pay adequately for a utility they cannot do without? Do they have the opportunity to determine the continuous and sustained service provision under conditions that suit their income levels? How far the TSP has been able to answer these questions are central to this enquiry. This is because mainstream literature on the transition from POO, to PSP, PPP and the TSP do not provide enough conclusion on which model is best for the poor in potable water supply. Hence the concept of pro-poor water services related to the stage of *Social Planning* in the Rothman's Model (Rothman, 1968), and emphasis was on the determination of the suitability of the TSP in particular for pro-poor water services, by comparing practical results from its application, to the available knowledge on previous models in order to identify gaps and make recommendations.

2.3.3 Community

According to Botchwey (2006), "the term community is used to refer to a group of people living together in one place, especially where they practice common ownership of something such as living space; or where they share values, ideas, responsibilities, resources, religion, race, profession; or some particular characteristic that identifies and brings them together"

(Botchwey, 2006: 6). Inferred from this definition is that, commonality of interests and aspirations are key factors in community life. A community is often made up of a system of social, political and economic considerations.

For community development to take place, the identification and incorporation of these considerations is absolutely necessary. Socially, we have households, groups and a network of institutions that provide tangible and intangible, the physical and spiritual needs of the people. Politically we have the traditional authority comprising the chiefs, elders, locally influential people and spiritualists; as well as formal sector political mechanisms embodied in the District Assembly framework (Botchwey, 2006). Economically, the various livelihood activities involving production, distribution and consumption, as well as the income/poverty levels of the people, and the institutional framework that facilitate these processes must be understood. The institutional framework also includes civil society organizations, such as the community Water Boards.

Thus, no meaningful community development project can take place without the concern of the traditional and formal sector leadership and the appropriate institutions, who can serve as key informants and partners of intervention projects. This study, being basically an institutional and behavioural assessment of the TSP model of pro-poor water services in the Dalun community, investigated how institutionalism was made use of in the realization of the objectives of the TSP for community development through the reduction of water poverty, but in the context of cost recovery. Specifically, it examined how the identification and incorporation of CBOs in a participatory model, is assisting to meet the objectives of collective management of the water tariff collection, through capacity building.

The concept of community has been taken for *locality* and represents the recipient of development, and so linked to the stage of *Locality Development* in the Rothman's Model (Rothman, 1968). The existing *structures* in the community before the TSP were also useful in the application of the stages of *Manipulation* and *Therapy* in the Arnstein's Ladder (Arnstein, 1969).

2.3.4 Structure/ Civil Society

Shani (2008), is of the view that discussion about civil society traces its roots to conservative romanticism and utopian socialism as counter reaction against the rise of capitalism and centralization of state power in the 19th century. This generates interest in the posititipn of the local Water Boards in the TSP; do they just take instructions for efficient tariff collection or are interested in ensuring fairness in water pricing by the public-private partners? According to Commins (2007), in capitalist societies civil society influences the state, and the state dictates the scope of operations of the civil society. This means there are multiple and complex influences on these relationships which are generated by various types of encounters. In local community development the concepts of civil society and structure are used interchangeably and mean the same in the context of this study.

Alan and Allen (2000), distinguish their definition of *structure* by focusing on the internal arrangements such as rules of behaviour associated for example with moral norms and hierarchies. In a practical situation it would be necessary to determine whether it is the mere representation of a community in a TSP that ensures participatory effectivness, or formal organization with legal and capacity building facets also matter. In other words it is worth determining how the nature of internal orgainzation and external associations of structures/civil society affect their ability to advance the interests of the citizenry (Linz and Stephan 1996), such as advocating for affordabable water tariffs, while ensuring the sustainability of services by seeing to it that citizens pay what they owe the service provider. This concept was considered in the application of all stages of the Arnstein's Ladder, and was a central considerarion in the use of the stages of *Social Planning* and *Social Action* in the Rothman's Model (Rothman, 1968; Arnstein, 1969).

2.3.5 Capacity Building

Capacity building for some, is concerned with increasing the ability of the receipients of development projects to continue their future development alone, without external support. It is a parallel concept to sustainability, as it furthers the ability of society to function independently in its own microcosm (WPID, 2008). Abrams (2000/2001) also adds that capacity building is the process whereby a community equips itself to undertake the necessary functions of governance

and service provision in a sustainable fashion. The process of capacity building must be aimed at both increasing access to resources and to changing the power relationships between the parties involved. The "community" may be a local government, a village level committee or even a central government department. Capacity building is not only a constraint to officials and technicians but must also include the general awareness of the local population regarding their services and development in general.

The concept of capacity building is of paramount importance in this study. Since community participation is nothing new in the management of public utility services, especially in peri-urban and poorer societies, an examination of the nature of innovative participation and the distinguished manner of the capacity building of the civil society in the TSP communities, and how these influence the attainment of the collective or mutual interests of the various partners of the TSP in water tariff management is necessary.

The concept of capacity building adds meaning to the practicability of the stages of *Manipulation* and *Therapy* in the Arnstein's Ladder, the effectiveness of which was measured at the stages of *Social Action* and *Citizen Control* (Rothman, 1968; Arnstein, 19969).

2.3.6 Community Participation

After capacity building, it was worthwhile to examine the level of participation and how effective the participating community structures could be, for the sustainability of the development intervention. Rural Community Participation strengthens the capacities of individuals and communities to mobilize and help themselves. In this way, dependence on the state is minimized and ordinary people discover their potential for co-operation and mutual endeavour (Midgley *et al,* 1986). Participation means active partnership between policy makers, planners, officials and beneficiaries. It also means the process of organizing people into groups which become action-oriented and eventually take responsibility for their own development (Obeng, 2008). This means the concept is about the invovlement of people in matters of communal interest which could be independently or externally determined.

In the late 1960s, there were a series of debates with regards to the relevance of community participation (Pateman, 1970). The advocates of the concept often had two main arguments to support it: Firstly, that participation makes for justice in decision-making. In other words, people have some say and influence on collective decisions, such as negotiations between service providers and community Water Boards on the issue of increase in water tariff as a public good and the position of the rural poor; and secondly, that through participation people learn (Beethan, 1992). It is the experiences obtained from the learning process that contribute to sustainability. The GPRS (2002-2004) presents a clear picture of the TSP in relation to the PPP and community participation; in the area of potable water, the document specifies that rural potable water shall be provided in partnership between the government (public sector) and private Non-governmental organizations (NGOs) in terms of meeting investment costs. Civil society organizations are to advocate for inclusion of socially important provisions of the strategy, such as issues of water tariff rate setting, while the private sector is to help implement measures that are attractive to them by going into partnership with the government, District Assemblies and other NGOs (GPRS, 2002-2004). Some forms of participation relevant to the relationship between the public-private sector organisation and the community Water Boards under the TSP are discussed below.

Passive Participation

This approach is unilateral in nature synonymous to the 'top-down' form of community development intervention. Here, people are told what is going to happen or has happened by administrators or project managers (Millar, 2007). Passive participation is also known as pseudo-participation because the local people or the beneficiaries of the development projects are simply called upon to ratify decisions already taken by external bodies in a way that makes the process look 'as if they are participating.

The involvement of rural populations in project implementation can hardly be described as participation unless they have been involved in the decision- making process that led to the project itself (White, 1982). However, depending on the nature of the development model being adopted by planners, projects may have different phases and hence involving differe types of participation. In this study, using the Arnstein's Ladder of Citizen participation.

(Arnstein, 1969), we shall see the relevance of passive participation at the initial stage of the development intervention in pro-poor water tariff management.

The negative consequences of passive participation could include the applicability of the social altruism theory (Criminal Justice Policy Review, 1999); in other words when community people are not involved in the initial decision making process leading to changes in the conditions of utility service provision such as water tariffs, this could result into negative externalities such as unwillingness to pay, illegal connections and general increase in unaccounted for water (Munasinghe, 1992). Hence, an examination of the reasons for failure or successes at different stages of participatory water services in the Dalun community, in relation to the nature and form of passive participation is necessary.

Participation by Information Giving

In this type of participation, beneficiaries of rural development projects play the role of providing information. This usually takes the form of responding to questions through various research tools such as focus group discussions, key informant interviews, structured and unstructured questionnaires. In other words, it involves answering questions posed by extractive researchers using questionnaire surveys.

Hamad (2008) associates participation by information with the etic approach in antropological research, which is usually a reflection of the researcher's view of the aspect of the local people's life that interests him. In social development the outcome of an etic research is often used to justify the implementation of pre-determined projects. In participation by information giving, development practitioners simply use the survey as a way of cross-examining themselves, so that everything is clear in their minds before they begin the intervention (Kane, 1995). The survey questions are thus the embodiment of decisions taken by the researcher and simply used to extract information from the local people. It can also be used for post-intervention evaluation of the project. In this study, we shall examine how the public-private sector organisations of the TSP used this tool at the rung of *Informing* in the Arnstein's Ladder (Arnstein, 1969) through the involvement of the community structures, and how the results influenced dynamism in the management process for service quality and water use behaviour (especially WTP) over time

Interactive Participation

Here, people take part in joint analysis, which leads to action plans and the formation of new local institutions or strengthening of existing ones. Groups take control over local decisions and help to maintain structures. Midgley *et al* (1986) used the term popular participation in place of interactive participation. It is the form of participation that promotes the interaction between various development actors and the beneficiary local community people. According to Midgley *et al* (1986) the notion of popular participation and that of community participation are inter-linked. The former is concerned with broad issues of social development and the creation of opportunities for people in the political, economic and social life of a nation, 'the latter connotes the direct involvement of ordinary people in local affairs'. This study sought to show how this form of participation has been the fundamental basis of the existence and operations of the TSP. Theories such as *community organizing model* and the *citizens ladder of participation,* and the *social disorganization theory* were well operationalized at the stages of active civil society involvement in the tariff management process under the TSP participatory model in the Dalun community.

Participation by Consultation

In consultative participation, people participate by being consulted and the external agency listens to the views of the local people. It is thus, a bottom-up approach for introducing development innovation. It is a process by which rural community people co-operate with development agencies by taking a wider view of development issues which transcend their own immediate interests (Midgley *et al,* 1986). It is one of the new dimensions for rural community development, which seeks to incorporate conservatism with modernity by the integration of local people's views into the development process for sustainability (World Bank, 1998). "Consultation" constitutes the fourth rung in the second stage of the Arnstein's ladder of citizens participation (Arnstein, 1969), that is the stage of *tokenism*, and constitutes an important component of the Rothman's community organizing model (Rothman, 1968), especially the stage of social planning. Participation by consultation was used alongside the major analytical theories in the analysis of specific levels of the community participation component of the TSP, such as negotiations on issues of pro-poor water tariff setting.

Functional Participation

This involves forming groups to meet pre-determined objectives related to projects, which may involve the development or promotion of externally initiated social organizations, only after major decisions have been made (Midgley *et al,* 1986). The impact of functional participation could be a positive or negative emanation from the applicability of the social disoraganization theory (Byron and Robert, 1989); a community's level of social organization is measured in terms of ----prevalence of organizational participation. For example, whether members would accept new conditions for the supply of potable water (such as from non-payment to payment for water), could depend on the level of participation by organized groups (civil society), such as Water Boards and the level of influence such organized groups have on the whole community.

Functional participation and its impact on community development in third world countries can be traced to the colonial era. Mayo (1975) pointed out that colonialism itself created the climate in which community development was to take shape. The dual mandate to civilize while exploiting, the use of forced labour under the pretext that it was an indigenous institution (formed by the colonial masters and comprising the colonized local people), with the main but, pre-determined objective (by the colonialists) of establishing durable and responsible political structures inter alia, facilitated early forms of community development (Mayo, 1975). Today, functional participation is the mainstay of the governmental machinery comprising the numerous departments and institutions under the various ministries, as well as activities of NGOs in developing countries in their interactions with rural communities. This study sought to determine how the TSP works as a functional participating group of organizations in pro-poor water services, with regards to the incorporation of community Water Boards in water tariff collection for improved services. This type of participation was of relevance at the stages of social action and citizen power under the Rothman's community organizing model and Arnstein's ladder of participation respectively (Rothman, 1968; Arnstein, 1969), which aided the analysis of the major themes of this research.

The concept of participation has also been looked at in various forms such as by information giving, interactive, consultative, functional and passive (Midgley *et al,* 1986; and Millar, 2007).

The literature on community participation in water service delivery has not been specific in indicating how each particular mode of participation has been executed, but rather concentrate on participation in a broader perspective. This does not make it possible for a systematic assessment of a participatory model, since various aspects of a participatory intervention may desire different forms of participation. This study shall reflect what has been done and what form of participation was adopted, and the reasons for success or failure, and hence pave the way for generalizations in the recommendations for the best form of participation for each activity, through comparative evaluation of the participatory tariff collection situation in the Dalun community of Dalun-Tamale corridor under the TSP.

Since the ultimate aim of participation in development is to ensure sustainability of the process, it would be important to understand what sustainability is about and how it was useful in this study.

2.3.7 Sustainability

A sustainable approach to development is one which takes account of economic, social and environmental factors to produce projects and programmes which will have results which are not dependent on finite resources. Something which is sustainable will not use more natural resources than the local environment can supply; more financial resources than the local community and markets can sustain; and will have the necessary support from the community, government and other stakeholders to carry on indefinitely *(WPID,* 2008). Capacity building and sustainability are closely related. Without adequate, appropriate capacity at different levels of government and at local level, services will not be sustainable. The factors which determine whether a development intervention would be sustainable or not (the sustainability indicators), provide the pointers to the areas where capacity needs to be established and maintained (Abrams, 2000/200l).

In this study, an examination of the capacity building and the participation of the community-based civil society orgainizations in the management of the water revenue, through their involvement in tariff setting, distribution and collection of water bills, as a component of a tripartite model has been considered. Attention was on how this arrangement helped in positive

attitudinal development among the citizenry in the acceptance and cooperation with the conditions established by the public-private sector partners of the TSP for the sustainability of water services. Here the application of the rung of *Citizen Control* and the stage of *Social Action* gave a picture of the level of sustainability after the TSP intervention (Rothman, 1968; Arnstein, 1969).

2.3.8 Economic Liberalism

It is an economic philosophy that permits private property in the means of production, and is also supportive of government regulation to a certain degree (Adams, 2001; Gray, 2007). It opposes government intervention in the free market, but not necessarily state provision of a few basic public goods such as water (Aaron, 2003). What generates attention in the above literature is that, not enough has been said about state provision of public goods. Because it is obvious that the state cannot avoid the provision of some basic goods like water (Mestrallet, 2001), but there are stratifications in society on the basis of urban and rural, the rich and the poor. The considerations given to the poor in the face of higher prices and profits as indicators of the efficiency of the PPP models in the neo-lideral system (Adams, 2001), is the unanswered question if states are inclined to social welfare and equity. This study has examined how the TSP answers this question by focusing on participatory determination and collection of pro-poor water tariffs at Dalun.

2.3.9 Privatization of water

Privatization involves allowing the private sector to participate in the provision of what had been considered government services, through denationalization (Redmond, 2007). In line with this the GWSC, which was launched in 1965 under Act 310 of the parliamentary Acts of Ghana and given the powers to be the sole provider, supplier, and distributor of potable water in Ghana, was privatized to become GWCL (Ghana Water Company Limited), and is now jointly operated by the Government of Ghana and Aqua Viten Rand Ltd of The Netherlands under a management contract (DERS, 2010). Mr. Gerard Mestrallet, President-Director of the French Water Company Suez, is of the view that privatization of water is impracticable in developing countries. He expressed this a public statement as follows:

> *"We believe that the privatization of water infrastructure in developing countries is not necessary. The use of the term privatization by some authors in their models while referring to situations where the public sector remains the final owner of the infrastructure constitutes an abuse of language" (Mestrallet, 2001; see also Labre, 2004; as cited in Castro, 2005: 758).*

Following the validity of this contention in the Ghanaian context, the term privatization of water shall be considered operationally to mean the participatory management of the water services between the public and private sectors in this study. Privatization of water in Ghana had its advantages and disadvantages; whereas it ensures quality of services through effective investment in physical infrastructure, as well as effective strategic plans for sustainability, especially in rural communities through participation of beneficiaries, strict emphasis on payment, and of course with high water tariffs due to profit motives, often tend to reduce utility maximization by the rural poor (Bacho, 2001), giving rise to social disorganizatio al effects (Byron, 1989; CJPR, 1999). This view is contrary to that of the Journal of Political Economy (J.P.E, 2005); some countries faced with the problem of how to improve water quality to safeguard consumer welfare now have proposals under discussion on how to privatize water. The J.P.E (2005) cited examples of positive effects of water privatization in Argentina in 1990, during which poorer areas hard increased access to quality water and water-borne diseases reduced drastically. However, what is lacking in this literature is the failure to disclose the relationship between water privatisation and tariff rates, and how these influenced the willingness of the poor to pay. Of course privatisation involving non-profit oriented private entrepreneurs, either under a PSP model or PPP, would improve both service quality and affordability in terms of lower prices for the poor.

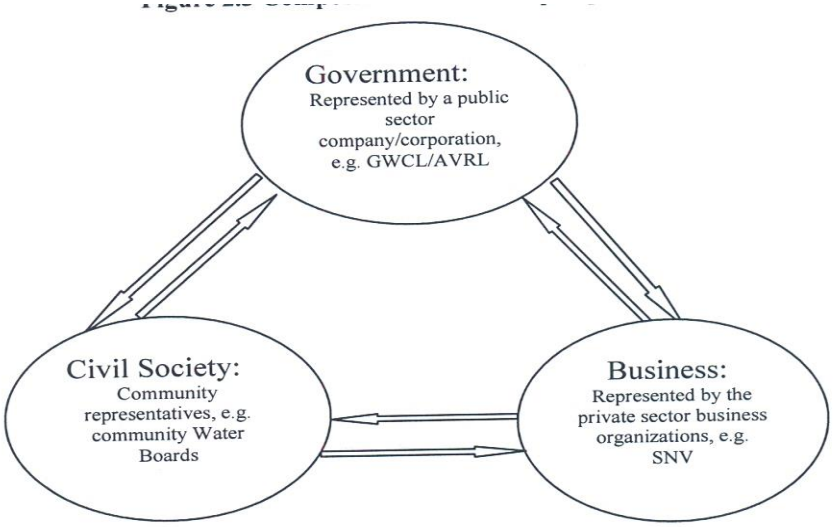
This thesis examined efforts made to intensify local participation through the TSP model conceptually defined below, and also measured the impacts on both service provides objectives and beneficiary expectations through participatory management of water tariff collection.

2.3.10 Tri-sector Partnerships

Operationally, *a tri-sector* partnership is understood as a partnership between *three* sectors: the public, private and community level organizations (civil society), to collectively own and run an enterprise in an industry (such as water) to cater for the collective and individual partner interests. WPID (2008) considers tri-sector partnerships as strategic examples of partnerships involving business, civil society and the government working together for the development of communities around the world. Theoretically, the concept of the TSP was examine, with the application of the rung of *Partnership* in the Arnstein's Ladder (Arnstein, 1968) and the stage of *Social Planning* in the Rothman's Model (Rothman, 1968). Successful results from TSPs, yield situations where communities benefit, governments serve more effectively and private enterprise profits (WPID, 2008), resulting in win-win conditions (Botchwey, 2006). Figure 2.3 shows the institutional linkages in a typical TSP in a pro-poor water service delivery model. Figure 2.4 shows that a typical tri-sector partnership could be between a public sector corporation or company- such as GWCL/AVRL, community Water Boards, and private sector development organizations- such as SNV.

The concept of the TSP has been the central consideration in this study, the purpose of which was to assess how the multi-sector activities in pro-poor water services is contributing to the participatory determination and effective tariff collection (as considered in the next two sections), with special interest in the participation of the community- based civil society organizations (Water Boards).

Figure 2.3 Composition of a TSP in pro-poor water services



Source: Modified from Picciotto (1997)

2.3.11 Pro-poor Water Tariff Determination

Water tariff rate setting or water pricing in general, has among other objectives the need to raise sufficient sales revenues to meet operating expenses and debt servicing requirements, while providing a reasonable contribution towards the capital requirement for future expansion of services (Munasinghe, 1992). In recent times the realization that the profit oriented nature of the water business in PPP or PSP models and the welfare of the poor are an unlikely couple, is drawing the attention of the public-private sector power holders towards pro-poor services in TSP models, and one of the major considerations is the issue of pro-poor tariff rate determination or water pricing (Munasinghe, 1992).

In pro-poor water tariff determination, some principles are followed in order to ensure fairness and equity in distribution as below:

- Fair allocation of costs among consumers according to the burden they impose on the system
- Assurance of a reasonable degree of price stability over time

- Provision of a minimum level of service to meet the basic water needs of the poor who may not be able to meet the full cost, and
- To raise sufficient revenues to meet the financial needs of the sector, among others (Munasinghe, 1992)

The last two principles are common in pro-poor service provision in the current TSP models, which assume that whereas the poor cannot be denied assess to this life wire commodity (water), their contribution should at least, meet the average variable cost (AVC) of providing the services to them to ensure sustainability (Amanfo, 1990).

One of the approaches used to provide some level of trade-offs between the different interests and considerations under the principles is by the adoption of Marginal Cost Pricing (MCP). Munasinghe (1992: 259) defines the Long-run Marginal Cost as" *the incremental system cost of supplying one unit of sustained future water consumptions, with an adjustment in the optimal capacity"*. The elements of interest in a pro-poor perspective in this definition are ' adjustments in optimal capacity' and 'sustainability'. By implication a TSP model through bargaining and negotiations, can incorporate the expressed ability of poor communities in relation to water tariff rates, after making provision for the minimum rate required to sustain water services.

The characteristic of the LRMC price to encapsulate economic considerations such as shadow pricing might raise questions as to how the specific needs of the poor are covered. However, even in typical profit maximizing perfect competitive markets which adopt LRMC pricing, the needs of the poor can be catered for through the adoption of *pareto-optimality*, in which the subsidies for rural and peri-urban poor consumers can be compensated for by increasing tariff rates for the urban rich (that is, to make someone better off, you must make another worse off; if the supplier is not prepared to sacrifice some profit) (Munasinghe, 1992). In other words, some form of price discrimination becomes necessary when we consider water consumer segmentation by income.

A specific form of adjustment in the LRMC pricing to cater for the needs of the poor is the Increasing Block Tariff (IBT): this is ' *'a price structure in which water is priced at a low initial rate up to a specified volume of use (block), then at a higher rate for additional blocks used"*

(Whittington, 1992; as in Nkrumah, 2004:18). IBT has been accepted by many donors and the World Bank. Some reasons that account for its acceptance include its potentials to ensure equity and conservation (Nkrumah, 2004). By equity, it is argued that the IBT ensures a progressive trend in the allocation of cost of water production as consumers in the low income bracket pay less than those with higher income levels. Additionally, since the price at the initial block has been subsidized, the IBT does not discourage the poor from the consumption of the amount of water considered essential for life (estimated at 25-50 liters per capita per day- *led).* The lower block price is therefore also known as the lifeline rate (Nkrumah, 2004).

In terms of water conservation, it is also argued that the IBT by rating consumption levels within the higher block at higher tariff rates serve the purpose of discouraging excessive use of water within this block and so helps to check wasteful use of water, thereby conserving water resource use (Nkrumah, 2004).

The major criticism against the IBT is that it assumes each household has metered water connection, but in developing countries this is not always the case: most households either share the same meter, or buy from public standpipes if they have no household connections (Whittington, 1992; Nkrumah, 2004). This usually has the effect of pushing the consumption level to the higher block of increasing tariffs, to the extent that the long-run effect of the IBT on the poor is regressive as the poor spend a greater part of their income on water than the rich. Also, IBT is said to cause revenue losses to the service provider due to the possibility of households having un-metered water to sell to others at rates far lower than the marginal cost (Nkrumah, 2004).

A flat rate tariff structure was traditionally considered to be suitable for pro-poor services, and so most rural and peri-urban areas have un-metered water. This method however has more demerits than the IBT; it does not only ignore the LRMC pricing effect but also regressive in nature as it may not be fair to the poor who may even use less water than the rich (Kelly *et al,* 200l). It can also cause loss of revenue to the service provider as explained earlier.

In view of the challenges associated with the IBT and the flat rate tariff structures, Kelly *et al,* (2001), expressed that tariff planners should classify water use into household and business, and sub-classifications based on number of households using a meter, small, medium and large scale businesses could be made and water tariff rates adjusted accordingly to have a uniform tariff for each category. In this way, not only would the LRMC pricing objective be met, but also the poor are protected from sharing the cost burden of over-use by businesses and/or water sellers, and also ensuring fairness among households of different sizes (Whittington, 1992). Also, advocates for the uniform tariff have met the critique that it has the danger of eliminating the lifeline rate (Nkrumah, 2004) and the poor who cannot afford the cost of water would have their welfare threatened.

Other limitations in the use of LRMC approaches in pro-poor tariff structuring include data constraints such as accurate assessment of average income levels of communities, and problems of adjusted metering on the basis of customer categories, time-of-use and geographical locations, as well as political requirements on issues of subsidization (Munasinghe, 1992). "However, in each case, such deviations from the LRMC will impose an efficiency cost on the economy" (Munasinghe: 262).

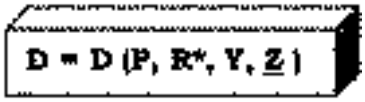
Though the above literature show various attempts to meet the needs of the poor in water tarrif rate setting, it is doubtful whether the collection processes and the willingness of the poor to pay as discussed in the next sections can be achieved, without the involvement of the poor in the tariff determination process. In some countries tariffs are determined by the central government and no discretion is given to local governments, while others allow local government participation in the process (Kelly *et al,* 2001). The challenge here is the basis for the option of TSP models in pro-poor tariff determination and collection. Studies show that allowing local participation in tariff rate setting is critically important for the decentralization process. This is because local participants can determine their consumption patterns and expenditure proirities and then set the tariff rates in accordance to the local conditions and social objectives (Kelly *et al,* 2001). The incorporation of local level participation could however be relaionships between the public sector and the community structures, or by the adoption of a tripartite approach in which the private sector development actors build the capacities of the community

structures and then link them up with the public sector for collective service delivery for efficiency. The latter is known as the TSP.

This study examined how various forms of community participation in pro-poor water tariff determination in the past have fared, and the change that resulted from the introduction of the TSP in the Dalun community, through its influence on the the people's willingness to pay and the tariff collection process as discussed below.

2.3.12 Willingness to Pay (WTP)

The concept of willingness to pay is an aspect of effective demand, which is expressed as the quantity of a commodity households are willing and able to buy at a particular price, and within a specified period of time (Amanfo, 1990). Also, Munasinghe (1992), demonstrated that the level of effective demand or the willingness to pay for water in any service area can be influenced by a number of factors as given in the model below:



Where P is the price per unit, R * is the service quality consumers expect to receive, Y is the variable which captures the level of economic activity (e.g. income) and Z is a vector of other relevant explanatory variables (Munasinghe, 1992: 129). These elements are interdependent, and this study adopted a qualitative approach to the examination of the application of the factors of this model in the context of the Dalun TSP on their contextual explanation as given below.

To start with, price (P) or water tariff can influence consumers' willingness to pay; for instance the shift from virtually free public water, to cost recovery after the adoption of the SAP/ERP in Ghana saw negative consumer reactions to the associated high water tariffs, especially the poor (Bacho, 2001), while in Cochabamba, the poor succeeded in expelling the multinational corporation which tried to charge them for this most basic common good (water) (Zibechi, 2008). This therefore implies that consumers' willingness to pay for water at a given tariff rate also depends on income levels and other economic factors (Y) such as major occupations (e.g. peasant farming). For instance, Kendie (1992), observed the high incidence of non- payment of

water bills in rural north Ghana, and tallied the situation to the agrarian and low income status of the people. This condition shows that high water tariff rates can induce disorganization effects as discussed in the theoretical framework. Of major significance of the *P* factor in the direct measurement of household willingness to pay, is its applicability in the Contingent Valuation Method, in which respondents are made to make a choice from a range of prices that they would be willing to pay for water (Munasinghe, 1992).

Also, the R * element is explained in terms of the quality of water services consumers etc, the regularity of pipe flow and response to reported cases of default; if these are poor but with regular reception of high water tariffs, this could induce negative attitudes towards payment for water services. For instance, studies in the Dalun-Tamale Corridor of the TSP, revealed that with the initial flat tariff rate policy, some standpipes sometimes had breakdowns and without services for months, yet bills were being received. The people expressed the view that they could not pay for what they did not consume (SNV, 2009).

Finally, with reference to the Z factor, other variables that could influence household willingness to pay for water include the socio-economic and demographic characteristics, availability and characteristics of other traditional sources of water versus the improved water supply, household attitude towards government policy in water supply and their sense of entitlement to government services can influence their willingness to pay for water (Nkrumah, 2004). Additionally, Byron and Robert (1989), in his Social Disorganization theory explained that the level of prevalence of orgainzational participation in society also influences the possibility of changing people's attitude to payment for services, especially if these were previously regarded as free public goods. Thus issues of participation in decision-making on tariff determination, meter reading and tariff collection processes could reduce disorganization effects and promote household willingness to pay for water in poor communities. Munasinghe (1992), has described the Z factor as an indirect approach towards the measurement of household willingness to pay for water, specifically known as "water use behahiour" (Munasinghe: 212).

Studies on household willingness to pay for water have yielded different results at different places over time. For instance, whereas the privatization of water in Ghana was found to have

increased service quality, most rural communities did not accept the associated increase in tariff initially and so were unwilling to pay (Bacho, 2001; TWOP Report, 2007), while studies on rural communities in Haiti show that the rural poor were willing to pay above the regular 5% of their income if water services were improved (Whittington *et al*, 1990). These variations make generalizations difficult.

This particular variable was considered as a dependent variable like the price households are willing to pay for water (P) which is influenced by an independent variable like household income (Y), with participation as the control variable which influences the relationship between WTP and household income/ or occupation (Z) (Munasinghe, 1992; Sirkin, 1999), manipulated through a contingent method. In line with the above function, the variables D, P, Y and Z have therefore been very useful in this study. Thus, attention was given to how water use behaviour as a measure of household willingness to pay, can be influenced positively through the involvement of community Water Boards under the TSP model of pro-poor services in the Dalun community. It is only when the peolple are willing to pay that a tariff collection strategy can meet its objectives as discussed below.

2.3.13 Pro-poor Water Tariff Collection

A pro-poor water tariff collection process should first have rules and regulations or governed by other formal tariff laws of the local government. This should also incorporate the support of the local people, which is crucial for improving the tariff collection process (Castro, 2005). After a pro-poor water tariff determination is completed (as discussed above), identification of the users of a facility, bill distribution and collection become necessary, and the effectiveness of this depends on how it is done. It is only when an appropriate water tariff collection process has been designed and well enforced that it would be possible to realise the objective of water revenue mobilization (Castro, 2005).

The tariff collection process could involve the definition of the period and mode of payment, such as daily, weekly or monthly; and whether payment is made to community local representatives (such as Water Board) or officials of the service provider organization; and the place of payment (at the public stand-pipe, the chiefs palace, at a popular community meeting

spot, at the house of the Water Board treasurer, home-to-home collection, or at the station/ revenue office of service provider) should be well communicated to facility users through water consumer education to ensure substantial voluntary compliance, which is crucial for sustainable local revenue mobilization (Kelly *et al,* 2001; Castro, 2005). The performance of local participants in the water tariff collection process can also be influenced by positive incentives such as payment of commissions, while penalties and sanctions such as withholding of services for non-compliance are complementary tools (Castro, 2005). In addition to ensuring prompt and regular payment of water tariffs, efforts must be made to ensure improved services to the poor. This among other factors, has a bearing on the willingness of the people to pay for water. The role of community Water Boards in the revenue collection process also has its problems. In Malawi, the incorporation of Community Kiosk Committees, though led to improvement in water revenue mobilization, committee members also soon resorted to the misappropriation of the water revenue (Water Aid Malawi, 2008).

In the context of this study, the issue of pro-poor tariff collection was very important during the measurement of the third objective of this study: assessing the effectiveness of the Water Boards in the tariff collection process. The implementation and outcomes of these approaches under different participatory models over time were examined in the practical situations at the Dalun community. This was facilitated by the application of a framework of theories to guide the analysis of the major analytical themes and complemented by the above concepts.

2.4 Empirical Reviews

This section contains other research findings, relevant issues and major debates related to the thematic areas of the research as derived from the research objectives.

2.4.1 Earlier Models Used in Community Water Services before the TSP

The public sector has dominated the ownership and management of water services in developing countries, where water "was considered by most Sub-Saharan African governments as a social good which must be provided by central governments to meet the social welfare needs of the people" (Bacho, 2001: 16). This study is however interested in the initiation of the PPP in

Ghana, and how the nature of participation in poor communities influence the level of water tariff collection.

An appreciable level of public water services originated from the severe shortage of potable water in Ghana in 1959, which compelled the World Health Organization (WHO) to sponsor a study on the potable water situation and came out with recommendations. This influenced the establishment of the Ghana Water and Sewerage Corporation (GWSC) in 1965 under Act 310 of the parliamentary Acts of Ghana. The GWSC was given the powers to be the sole provider, supplier, and distributor of potable water. It was also to see to the conservation of the nation's water resources for public, domestic and industrial purposes (Saaka *et al,* 2007; DERS 2010) The GWSC was thus, established as a statutory public utility organization and thus, originated with the POO in Ghana. Within this period, there was virtually no pro-poor orientation in water services delivery, and strategies were basically on service expansion. Utility users did not also see services charges as a problem as it was virtually free (TWOP Report, 2007-200~; Bacho, 2001), as the government was more concerned with social welfare.

The apparent failure of the public sector to meet the ever-increasing demand for water, coupled with the inefficiency of the POO model to generate adequate revenue to meet operational costs for sustainable services (Kendie, 1992), brought about the adoption of the neo-liberal ideologies initiated by the World Bank and the IMF in the 1980s, leading to the mass privatization of water and sanitation services by most developing countries in the 1990s (Bacho, 2001). There was thus a shift from the POO to the Public-Private Partnership (PPP) in the management of the water sector (Nkrumah, 2004; Castro, 2005; WaterAid, 2009). However, the immediate problem associated with the PPP model of water and sanitation services provision was the inability to meet the needs of the poor in terms of affordability, but who in view of the perception of the water as an everyday life commodity and an environmental resource, think accessibility to water should a right and a social responsibility of the state. This led to the re-thinking of water and sanitation services provision in a pro-poor perspective.

The supply of water in both rural and urban areas have taken various dimensions in Ghana over the years. The Government, in line with the Structural Adjustment Policy (SAP), decided to

disengage itself from the direct provision of potable water- especially as a free commodity (Bacho, 2001). Accordingly, in 1991 the Government of Ghana held a national conference at Kokrobite near Accra, which led to the adoption of the sector specific strategy. "In September 1994, the Rural Water Department was redesigned as the Community Water and Sanitation Department (CWSD)" (Bacho, 2001: 39) under the GWSC, and by 1996 there was a declaration of the privatization of the GWSC, which was renamed the Ghana Water Company Ltd (GWCL) (DERS, 2010). In December, 1998, the CWSD was transformed into an agency by an Act of Parliament (Community Water and Sanitation Agency Act, 1998 (Act 564)) (Bacho, 2001)

The implication of this arrangement was that private sector entrepreneurs and non-governmental organizations (NGOs) could now participate in community water services by undertaking some of the responsibilities previously borne by the Government (Water Aid Malawi, 2008; Castro, 2005; Bacho, 2001). This spells the origin of the PPP in Ghana. Additionally, "communities are to contribute between 5-10 percent of the investment cost while bearing 100 percent of the recurrent cost associated with the operations and management of their potable water systems. The Government will absorb 10 percent of the investment cost as counterpart contributions and the donors 85 percent of the investment cost" (Bacho, 2001:40). Community participation is therefore not new in water delivery services in Ghana. The difference to be established in this study is the deliberate formation of community-based civil society, their capacity building and full recognition by voice and actions as partners in the TSP, rather than mere cost sharing and the execution of roles imposed on the communities by the public-private sector power holders .

We can now deduce from the above that before the early 1990s, Ghana experience the POO (DERS, 2010), and beyond that period, the country has been experiencing the PPP (Castro, 2005; Nkrumah, 2004; Bacho, 2001). The PPP in the context of this study, is looked at in two phases: the typical PPP involving public and private sector organizations without formal community based civil society participation; and the PPP with formally incorporated civil society participation in water services (especially in poor community). The latter thus, involves three sectors (public, private and community-based civil society), hence the tri-sector partnership (TSP), which constitutes the bone of contention in this study.

2.4.2. The Performance of Earlier Models in Water Tariff Collection

In developing countries, the performances of the POO and the PPP models in water tariff collection have varied over the years. Research findings on the POO in Malawi revealed that apart from poor billing systems, the public sector failed to effect efficient tariff collection processes to the extent that many households owed huge sums of water bills in arrears (Water Aid Malawi, 2008), while similar reports in Ghana show that poor tariff collection accounted for over 80% of water revenue losses (TWOP Report, 2007/2008).

Kelly *et al* (2001) have attributed the inefficiency of the POO in the water tariff collection process to administrative incompetence and poor capacity building or training of public sector field staff. The combined effects of poor tariff collection and misappropriation of money by corrupt leaders accounted for the failure of the public sector to meet the operational cost of providing water services and the resultant privatization of the public water sector in low income countries (Kendie, 1992; Water Aid Malawi, 2008). The change from the POO to the PPP in an attempt to remedy the poor tariff situation initially however made the poor worse off, as though tariffs were exorbitantly high, there was no consultation with users in the tariff determination process and this negatively impacted on user cooperation with the tariff collectors, to rejuvenate the very factors that led to the privatization of water. The challenges faced in the provision of water services to the poor have made service providers to realize the significance of community participation in tariff determination and collection, hence the emergence of the tri-Sector Partnership (TSP).

Mainstream literature in the field of public water services however, do not provide deliberate comparative assessments of previous models of public water services such as the POO and the PPP. Hence this study has focused on comparing the effectiveness of the PPP with, and without community participation in tariff collection.

2.4.3. Factors that Account for the Formation of Tri-sector Partnerships inl Pro-poor Water Services

Currently, the emerging models for the management of water systems for the peri-urban and rural poor are shifting away from contracts or the PPP to co-production; creating multi-sectoral

consortiums or tri-sector partnerships (TSP) to speed up the delivery and transfer of peri-urban and rural water and sanitation systems (WaterAid, 2006). This is due to the realization that governments of third world countries have not been successful in single-handedly controlling development projects that maximize the social welfare of their peoples (Todaro and Smith, 2006). Again, *Todaro and Smith (2006)* consider the reasons for government failure to achieve set objectives for social welfare maximization in development plans to be deficiencies in the plans and institutional weaknesses among others. Thus, the lack of adequate institutional frameworks and low beneficiary participatory mechanisms account for the high level of project failures in developing countries.

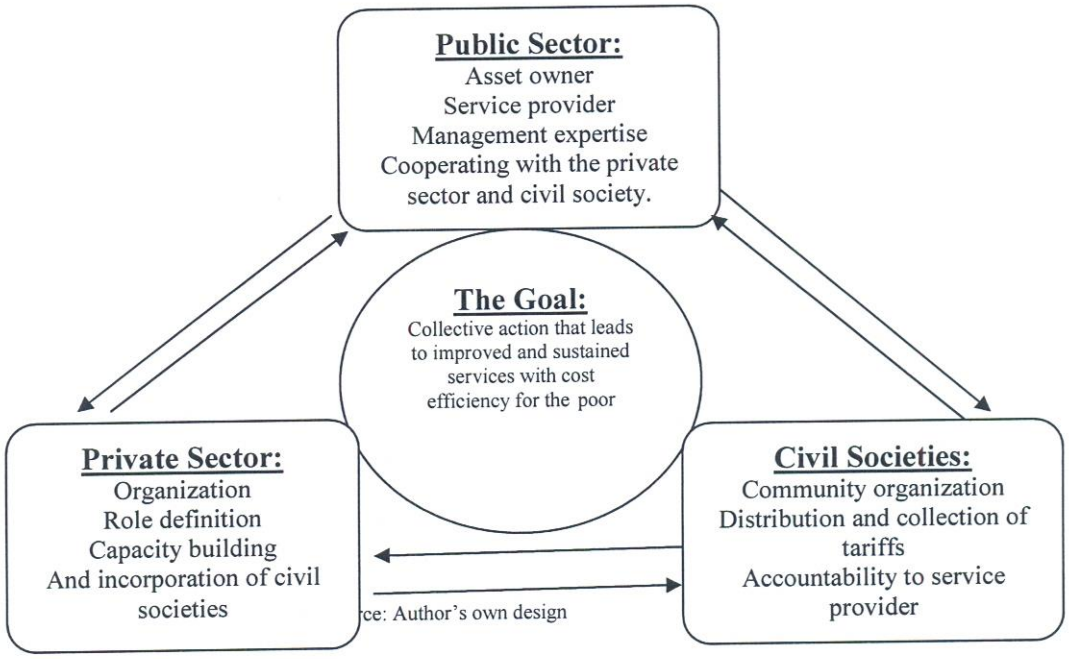
The alternative way of achieving development objectives in the face of these public sector bottlenecks is the adoption of the multi-sectoral approach involving the public and private sectors and civil society through *tri-sector partnerships* (WPID, 2008; and Castro, 2005). For instance the Business Partners for Development (BPD) was a project-based initiative set up to study, support and promote strategic examples of partnerships involving business, civil society and government working together for the development of communities around the world. The belief was that TSPs could provide long-term benefits to the business sector and at the same time meet the social objectives of civil society and the state by helping to create stable social and financial environments (Abrams, 2000/2001), such as effective water revenue mobilization, service quality and pro-poor orientation. By implication, there should be mutuality among parties in deciding the basis of the partnership and their expected commitments, which should be compatible with their capabilities and willingness to undertake as in the case of water tariff setting and collection in a beneficiary community.

The GPRS *(2002-2004)* presents a clear picture of the TSP; as it provides for partnership between public sector, NGOs and and community-based Civil Society Organizations (CSO) in the area of rural water supply. The purpose is to facilitate cost sharing in the provision of quality water for the poor, while ensuring the sustainability of the services through the participation of the people by decision-making and implementation, especially in revenue mobilisation to meet operational cost and future expansion (Munasinghe, 1992). In particular, problems such as high rate of non-metered water, frequent breakdowns, and high level of water bill arreas (Kendie,

1992; Nkrumah, 2004; POI, 2008) create increasing desire for partnerships with CSOs, who could make a greater impact by information giving (Midgle *et al*, 1986), in addition to other roles.

The TSP model is therefore a synoptic community development planning approach, as it involves the use of collectivity in goal setting, identification of alternatives, evaluation of means and ends, and joint implementation of policy (Hudson, 1979), through multi-staged consultation (Horvat, 1972). By the involvement of local Water Boards in say water tariff collection, both the tariff payer and the tariff collector have the same aspirations that do not generate conflict and so promote effectiveness in the payment and collection processes through functional decentralization, Friedmann (1973). This promotes local support. Thus, a tariff policy in a TSP model is more likely to increase the confidence of the local people for effective payment for services, than an ordinary PPP model in which a centralized public-private sector agency dominates all processes. Figure 2.4 shows the multi-directional relationships between the partners of the TSP and their associated roles for the meeting of collective interests. It displays the possible roles of partners in a TSP, which serve as the basis for them to achieve the ultimate goal of sustaining water services to the poor, without compromising the ability of the service provider to meet operational cost.

Figure 2.4: The TSP Partners, roles and interrelationships



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This study did not only identify the stakeholders of the TSP in Dalun, but also the factors that created the need for such a partnership, and how this arrangement contributed to the fulfillment of the aim of achieving optimum tariff payment by the poor for the sustainability of services.

2.4.4. Procedures Involved in the Incorporation of Community Water Boards by the Public-Private Sector Organizations of the TSP in Pro-Poor Water Tariff Collection.

The procedures involved in the incorporation of community participation in any multi-sectoral intervention vary widely, but can be simplified by modeling. For instance, Kathy (1999) developed a five-phased community institutional participatory management model, which describes the various stages involved in the development and incorporation of CBOs in participatory development interventions. Below is a description of the five phases of the model:

Phase 1: Identification of Pre-conditions for Success

The first phase begins with an assessment of the interest of the local people first in the proposed project and second- whether they are interested in participating. Also, determine whether the people actually see the problem as you see it. Assess also the extent of the problem for which the proposed project is to solve- such as unwillingness to pay for water bills and the poverty dynamics, and how are the prevailing conditions likely to affect the peoples' willingness to cooperate and participate? It is equally imperative to know how willing the public sector representative is (e.g. GWCL, District Assembly, etc) to cooperate with NGOs and CBOs in the proposed project partnership.

Identify existing CBOs (e.g. Community Committees) and their participatory relationships with other NGOs and public sector organizations, as well as their performance record . Identify among the key players of the proposed participatory model (such as the TSP), member (institution/organization) that is willing and capable of financing the project for medium (3-5 years) or long-term (over 5 years) (Kathy, 1999). This is necessary for meeting the financial requirements at various stages of the implementation process.

Phase 1, falls within the stage of locality development (Rothman, 1968) and involves citizens manipulation and therapy (Arnstein, 1969), in which the community participates passively and by information giving (Midgley *et al*, 1986; Millar, 2007).

Phase 2: Implementation of the Participatory Management Plan

At the second phase the public sector asset owner (e.g. GWCL) is to collaborate with NGOs and CBOs to establish participatory relationship with community members, as well as the formulation of the components and mode of the participatory process through consultation with internal advisory group (by the asset owner) made up of representatives of donors and major collaborators. This might involve the use of participatory rural appraisal (PRA) techniques or the bottom-up approach through which communities are enabled to identify the problems themselves. They are then allowed to identify their own solutions that fit well in their economic and socio-cultural backgrounds - *'authentic participation* ' (Midgley *et al,* 1986; Millar,

The interventionist organizations refine the solutions of the local people by comparing to tested methods that ever worked, and modifications made, with the consent and agreement of the people (if any). The service provider then empowers the facilitation process by co-ordinating the defined activities of the respective NGOs, CBOs and other community groups. Research institutions that can provide training could also be involved. To make the second phase effective local private sector development actors who are partners should be engaged early enough in the implementation process involving data collection, resource mobilization and economic analysis such as the poverty level of the people, and hence forecast possible problems that could be encountered and how this should influence policy direction or redirection. This is then incorporated into the training process for field staff and community structures.

This is followed by the formal institutionalization of the community structures (as legal entities if possible) to commence operations. Community representatives should have the full support, recognition or legitimacy from the people to act as such. The second phase should also involve establishing a monitoring and evaluation strategy, and providing training on ongoing projects and support schemes (Kathy, 1999). This should include for instance the training on tariff sharing, bill collection, record keeping and accountability (Kelly *et al*, 2001). The second phase

therefore involves social action (Rothman, 1968) and all aspects of the stage of citizens power in the Arnstein's Ladder (Arnstein, 1969).

Phase 3: Identification of Constraints

In the third phase, there should be the facilitation of research to identify and address technological constraints relating to the physical infrastructural set-up (e.g. operation, durability, possibility of illegal tapping of piped water, etc.). The service provider must make use of this information to ensure that services are regular and uninterrupted by physical breakdowns, since these could affect the people's willingness to pay (Whittington *et al,* 1990; Munasingh , 1992). Also, early detection of illegal tapping of water could lead to the adoption of strategies to control the situation and reduce revenue losses, through the participatory process.

Consideration of incentives and other social and economic issues that could motivate the local participating groups for better performance are also considered in this phase.Working with new groups at new areas could generate top-down approach expectations, where the service provider is thought of to be responsible for *'everything'*. So the team should have a well defined strategy for responsibility sharing among partner organizations and by gender (Kathy, 1999), especially in water related issues where women dominate in terms of usage as an aspect of their reproductive roles (Moser,1993). They can better determine service quality and so play important roles in pro-poor tariff determination and other issues of decision-making involving appropriate methods of tariff collection. However, their chances of participation in the decision–making process could be undermined by traditionalism (Apusigah, 2004), hence the need for intervention in women's participation.

In terms of the market base; in other words for a project that aims at cost recovery or profit maximization, the ability of the people to pay for services could be a major problem to consider. Hence, the project formulation, objective statement and variable definition should not be projected above the absorptive capacity of the intended users in terms of pricing or tariff determination; otherwise there could be project failure. This implies that since LRMC pricing usually takes investment cost into consideration among other factors, the adopted technology should just be enough to meet the exact needs of the people. This would minimize tariff rates and

so increase the affordability of water price to the poor. In fact, in the choice of technology either for cost efficiency or otherwise, it is appropriate to expose the people to all the applicable new technologies and let them make their own choice after making them aware of the cost and service charge implications of each option. All these fall under the Z factor of the effective demand (Munasinghe, 1992) or willingness to pay model as discussed earlier, and so depict the success of community participation in the tariff collection process.

Phase 4: Impacts Evaluation

Engage local research institutions to carry out a survey on the performance of the adopted participatory model, to determine degree of achievement of objectives. Volunteer groups such as local students, post-graduate students (local or foreign or both), can also be used to execute a before-and-after intervention research for system evaluation (Kathy, 1999). In this way the effectiveness of the involvement of community Water Boards in the Tariff collection process can be assessed by comparing performances before and after the intervention.

Phase 5: Lessons Learned (Feedback and review)

The results of phase 4 above shall constitute the project feedback; through which partners assess the effectiveness of their individual and collective roles and responsibilities (Kathy, 1999). Based on the feedback information, strategies are formulated to mitigate any short-comings, based on the recommendations of the people, community structures, locally influential people+, field staff, research team and some inputs of the partners (e.g. tariff subsidies by the District/Metropolitan Assemblies-from poverty alleviation funds and debt relief by service provider in pro-poor service delivery).

Studies show that the adoption of these procedures have yielded positive results in the water sector in developing countries. For instance, in Malawi, the realization of the short-falls of the POO, compelled the Lilongwi Water Board to engage political and traditional leaders to manage kiosk committees at various zones, who are responsible for water tariff collection. The Board also works in partnership with a local non-governmental organization- the Center for community Organization and Development (CCODE). The partnership plans for the sustainability, efficiency

and transparency in the provision of safe, affordable and reliable water supply to informal settlements (Water Aid Malawi, 2008).

Critically, it should be noted that the original presentation of Kathy's work was in a tabular form in which several other variables including geographical representations were considered with much emphasis on rural agricultural development. The above model has therefore been modified to suit the textual basis of this particular research. It is however obvious that despite the ability of Kathy's work to fit well in the selected analytical theories for this study, it has somehow, failed to define the exact organizational structure that represents the community in the multi-sectoral participatory model such as the TSP. In this respect POI (2008), in its facility management plan, apart from carrying out most of the procedures indicated in Kathy's work, also considers the internal organization of the community Water Boards. This involves the assignment of leadership and roles within the structures. Thus, the Water Boards have a Chairman, a secretary and a Treasurer.

This study examined details of how the various TSP partner organizations have tried to develop and incorporate community participation in the water tariff collection process, and/ how this could have contributed to the efficiency in the revenue mobilization or tariff situation as discussed in the next section.

2.4.5 The Effectiveness of community Participation under the TSP over jprevious participatory models in pro-poor water tariff collection.

The Business Partnership for Development (BPD) has demonstrated that tri-sector partnerships could provide long-term benefits to the business sector and at the same time meet the social objectives of civil society and the state by helping to create a stable social and financial environment (WPID, 2008). TSP can provide win-win benefits to the state, the private sector and civil society; and the private sector can effectively apportion the financial and technical burden among the stakeholders. The civil society however has the potentials for the promotion of communal goodwill and sustainability of an intervention among the local people (Abrams, 2000/2001). Thus, in the area of water tariff collection, the private sector could decentralize tariff collection strategies to local Water Boards after setting some guidelines based on the "legal and

policy framework, and the socio-cultural traditions that indicate preferences or priorities and the ability to pay" (Kelly *et al,* 2001: 1). This means that pro-poor tariff determination process should usually allow some local discretion on rate setting, in which the role of community-based civil society is crucial. This promotes active local contribution with high compliance level to the payment of local tariffs, as well as volunteerism to achieve local goals (Kelly *et al*, 2001). The failure of other community service models to incorporate local participation n tariff determination has been responsible for the unwillingness of the people to pay for the services in the past (World Bank, 1993).

More specifically, the incorporation of community participation in pro-poor water services is first and foremost, an opportunity for easy and legitimate community entry for the commencement of any intervention, which contributes to a favourable policy environment (Twumasi, 2001). Community participation is important in the context of this study because the transition from a period of low or non-payment for potable water under the POO, to one of payment for water for cost recovery by the poor under the PPP, is usually not an easy task. For instance, through the water war of April, 2000, the poor of the city and countryside of Cochabamba succeeded in expelling the multinational corporation which tried to charge them for this most basic common good (water). Between 2003 and 2005, the poor of the entire country drove out the neoliberal model of water management. Now it is community management of water that is the unresolved challenge (Zibechi, 2008). The approach of the TSP for effective tariff management in the water sector can be illustrated in Figure 2.5.

Figure 2.5: The TSP pro-poor water tariff administrative model

Source: Author's own designed

Figure 2.5 represents a pro-poor water tariff administrative model that also indicates how community participation can influence the effectiveness of the water tariff collection process under the TSP, among others. The public sector (such as the GWCL) provide capital investments in water infrastructure and other recurrent expenditures (Bacho, 2001), and so assesses the investment cost for the determination of the marginal cost and hence marginal cost pricing of water (Munasinghe, 1992). It also provides an enabling environment for interactions with the private and community level structures in issues of pro-poor tariff determination through bargaining and negotiations on how the needs of the poor could be taken care of.

Under the TSP, the private sector facilitates the formation (if non-existent) and capacity building of the civil society at the community level, as well as establishing the conditions that make the relationship between the public sector and the civil society binding, in order to ensure collaboration and efficiency in process execution such as tariff collection (Kelly *et al*, 2001). In a similar trajectory, Kandie (1992:126) recommends that "in defining the success of water projects, considerations should be given to funding and implementing agencies towards other issues such as community participation and education, which are basic ingredients affecting community predispositions to take responsibilities". CSOs perform better in inducing community memebers to pay for services through education. Hence this study has examined how the TSP identified and made use of this power of the local Water Boards in the study area through capacity building.

The efficiency of community Water Boards in the improvement of the tariff collection process can bring about an improvement in the net benefit of investments in poor communities. This is because the situation would bring about improvement from the existing service quality (R) to the service quality consumers expect to receive (R*), reduce inconveniences suffered by consumers (QC) and enable the service provider to meet the supply cost (SC) on a sustaibable basis (Munasinghe, 1992).

Thus, the efficiency of a community participatory tariff collection process inter-allia, would lead to an increase in the net benefit (NB) from pro-poor water supply and consumption as expressed in the function below:

$$NB(D, R) = TB(D, RP) - SC(D, R) - QC(D, R, R^*)$$

Where D, P, TB and RP also stand for the demand for water, the price, the total benefit and perfect service quality respectively (Munasinghe, 1992: 129). This study was interested in determining whether the process of attitudinal influence for a positive change that can lead to improvement in the net benefit, could best be done by external agencies or community-based civil society. It is however worth mentioning that pro-poor water tariff optimization projects are multi-objective in nature and so require multi-objective decision-making, the measurement of which do not necessarily require quantifications in monetary terms (Wargner, 1975; Munasinghe 1992).

Prior to the privatization of water in Ghana, the supply of peri-urban water was virtually free (TWOP Report, 2007-2008). The initial opposition of privatization of water was due to the possible high tariffs to be associated with it. It has been argued that the profit oriented nature of the PPP, coupled with the fact that their financial resources are obtained from the capital market (Nkrumah, 2004), substantiate the need for cost-benefit operations through effective tariff collection. However, the concept of cost-benefit analysis and the mathematical catechism involved are beyond the scope of this study. This is because the study is mainly focused on institutional relationship and attitudinal factors which cannot be quantified (Munashinghe, 1992). In other words they are social benefits. Secondly, the study area only experiences an extension of services from a metropolis, hence the total investment cost is too large to compare to revenue from the Dalun community alone.

Generally however, social utility services, though essential for the maximization of the welfare, are often faced with high investment cost but low returns (especially in deprived aeas). The GPRS I and II, indicate that the three Northern Regions of Ghana (Northern, Upper East and Upper West) are the poorest part of the country. Dorosh and Sahn (1993) establish that 80% of the poor in Ghana live in rural areas. Characteristically, the northern part of Ghana has most of its settlements being rural and mostly agrarian; agriculture employs about 80% of the labour force of Northern Ghana (HIPC Watch, 2002). The poor climatic conditions of the area as a true

tropical continental climatic zone (Kwamena and Benneh, 1988), results in low output and hence low income (Osei, 1983). Additionally, the seasonality of agricultural productivity, due to the single maximum rainfall regime, means that income flow is seasonal (Seini, 2002). This affects the sustained ability to make regular payment for potable water which is continuously consumed for life and good health (GWSC, 1969). The situation is further worsened by the fact that the responsibility of payment for water is in the hands of women who constitute the poorest segment of society in the context of agrarian rural settlements (Kendie, 1994).

What attracts the attention of this research is that mainstream literature on povety in the northern part of Ghana, and its impact on service delivery and effectiveness of the tariff collection process appear conservative in nature; for they do not show how emerging models of pro-poor community development through participation attempt to find solutions to the problem, especially when it comes to cost-recovery. Attention has often been focused on the socio-economic factors that have accounted for the failure of the PSP and the PPP models of service delivery. Hence, this study intends to close this gap by indicating how the incorporation of an understanding of the socio-economic background of the Northern Ghana rural poor population, helps to satisfy the needs of both the development interventionist and the poor beneficiaries. In other words this thesis, through the execution of the appropriate methodological procedures as described in the next unit, examined how a win-win strategy-based alternative participatory development model, breaks the neck of poverty as an impediment to access to the basic needs of life such as water, in an era of private sector cost efficiency, but with pro-poor orientation,

2.1.6 Gaps in the TSP Model

Since the TSP model is fresh in pro-poor water delivery services, and for the added fact that this study made an assessment of the model as a pilot intervention, it was too early to discuss the gaps since no adequate literature is available until the study was conducted. In other words mainstream literature on the TSP are mostly recommendations for the adoption of this new model as a remedial strategy for deteriorating conditions under other models (JICA, 1997; WPID, 2008). Once the gaps were identified through this study, an opportunity was provided for the modification of the model for the way forward in the concluding chapter.

CHAPTER 3: METHODOLOGY

3.1 Introduction

Research methodology refers to the concepts and methods used by social scientists in collecting research information that is relevant and meaningful enough to help the researcher to understand the phenomenon under study (Twumasi, 2001). This unit therefore presents the methodological procedures used in the execution of this study in order to obtain accurate and reliable data that provided answers to the research questions (Kumar, 1998). The researcher has provided for justifications and flexibilities in the use of the various concepts and methods in order to overcome special challenges and to introduce innovations in the existing traditional methodological procedures.

3.2 Profile of the Study Area

General Overview

The high cost of the Tamale Water Optimization Project (TWOP) raised the need to incorporate pro-poor rhetoric into the service delivery process in order to ensure fairness in both service quality and affordability, with the altermate objective of promoting effective water tariff collection through community participation. The Tri-sector Partnership (TSP) model was considered as an appropriate approach through which cost-effective pro-poor water service delivery could be achieved. The TSP was implemented along what became known as the Dalun -Tamale Corridor, which comprises rural settlements between Dalun and Tamale, and paricularly through which the *delivery main* (main delivery pipe line) passes (TWOP Report, 2007 2008).

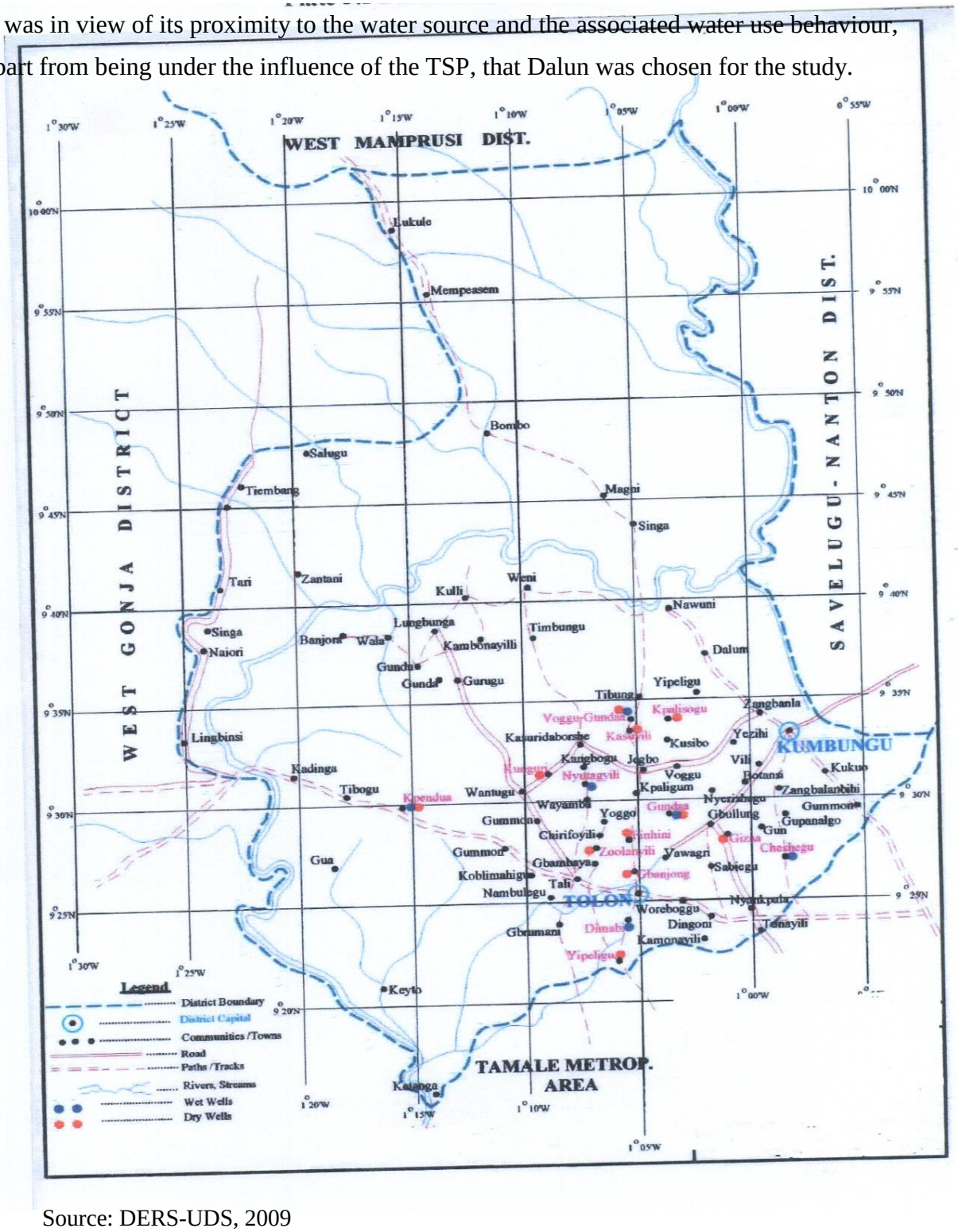
The Research Location

Dalun Station, Dalun Nayili Fon and Dalun Kanbong Naa Fon, which are sub-communities of Dalun, were chosen for the study because of their proximity to the source of water intake (the Nawuni dam near Dalun), and the active involvement of civil society groups in the TSP (the Water Boards), and the mild conflict arising from the divergence between resource ownership and producer prices.

Dalun is a town in the Tolon-Kumbungu District of the Northern Region of Ghana. It is situated 30 km to the north-west of Tamale and 30 km from Tolon- the District capital. Its location near to the Nawuni dam which is the water intake source for the GWCL- Tamale, at the northern corner of the town has given it the advantage of benefiting from pipe-borne water supply (POI, 2008). Plate 3.1 shows the location of Dalun in the Tolon/Kumbungu District Context. The relative position of the community to Nawuni (where the main intake dam is located), the White Volta River and the Tamale Metropolis can be seen on the map.

Plate 3.1 Dalun in the district context

It was in view of its proximity to the water source and the associated water use behaviour, apart from being under the influence of the TSP, that Dalun was chosen for the study.



Source: DERS-UDS, 2009

Population

The population of Dalun is 3,658, with a male population of 1, 797 and a female population of 1,861 (Projected from the 2000 Population and Housing Census of Ghana). This means that females dominate with a higher percentage of 50.90% while males form 49.10%. Though Dalun is a patriarchal society, water is a feminine issue, hence equal chances were given to both sexes in the sampling of respondents as discussed later. The study has partly examined the behaviour, especially attitudes towards payment with a gender lens. In this perspective therefore the total population per se, was of little significance. Attention was thus focused on households that depend on particular public standpipes through cluster sampling of zones and simple random sampling of houses from which respondents were selected accidentally (Twumasi, 2001)

Major Occupations

About 85% of the people are farmers engaged in food cropping and animal rearing, which is characteristic of Northern Ghana (Seini, 2002; POI, 2008). 12% undertake petty trading with the majority in food vending and 3% in services like teaching and artisanship (POI, 2008). Since the area experiences a single maximum rainfall regime, the farmers experience seasonal unemployment during the dry season. This means that the average household income is not only low, but also seasonal in flow (Kendie, 1992), thus accounting for the inability to stain the capability and willingness to pay for potable water, which is part of everyday life (Bacho, 2001). This study has examined how the incorporation of the economic background of the people in the TSP participatory model has helped to meet the challenge of ensuring reasonable payment for water.

Social Characteristics

The Dagomba constitute the major ethnic group. The Dagaba, Frafra, Kasena, Moshie, Akan, Bato and Ewe are also found in Dalun. About 80% of the people are Muslims, 10% Christians and 10% Traditionalists (POI, 2008). Polygamy is common in the area and accounts for larger household sizes. This leads to an increase in the number of households mounting higher pressure

on the water system (Munasinghe, 1992). An examination of how the awareness of high demand for water but lower ability and willingness to pay is influencing collective management of the water tariffs with a pro-poor inclination was paramount in this study.

Socio-economic Infrastructure

Dalun has basic and secondary education systems. The road leading to the town off the metropolis and the Dalun town roads are not tarred. Electricity, health and financial services are available in the town. The study area experiences the Community Water and Sanitation Agency's services (CWSA) and so has sanitary facilities such as latrines and refuse tanks. It is one of the fortunate communities outside the Tamale Metropolis that benefit from the services of the GWCL, due to its proximity to the main water source (SNV, 2009). Table 3.1 shows the distribution of public standpipes in the area.

Table 3.1: Distribution of water supply facilities in Dalun

Off takes delivery systems	Sections served in Dalun	Number of Standpipe
Number 1	1. Dalun Kanbong naa fon	1
	2. Dalun Nayili fon	1
	3. Gari fon	1
	4. Poliya fon	1
Number 2	1. Dalun station	1
	2. Zunaayili	1
	3. Biihinaayili	1
	4. Zugu-Kanshegu	1
	5. Satani	1

Source: Pragmatic Outcomes Incorporated, 2008

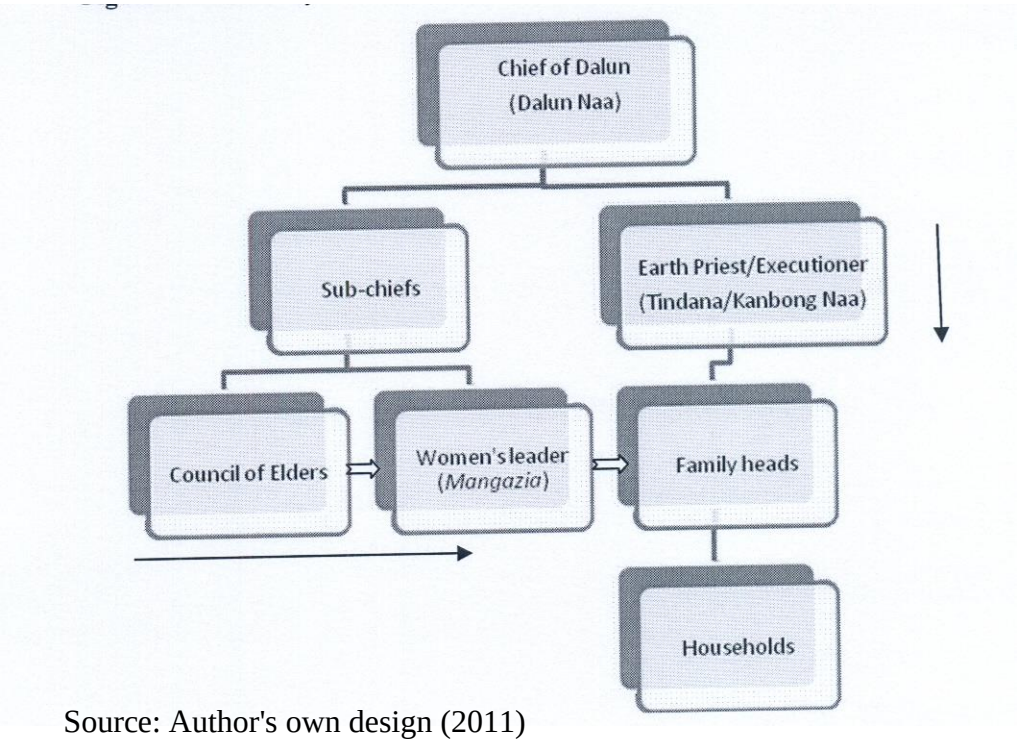
Table 3.1 shows that each zone has one public standpipe. The selection of Dalun Kanbong Naa Fon, Dalun Nayili Fon and Dalun Station was the result of the preliminary survey and random

sampling techniques, and were accepted on the basis of evidences of Water Board activities in relation to the TSP, and availability of reliable records of water bills covering the periods before and after the TSP operational period (2006 and 2008 respectively).

Socio-political Organization

Figure 3.1 reveals a centralized or bi-cephalous type of traditional political system for Dalun. The Dalun *Naa* (Chief of Dalun) is at the apex of the hierarchy, followed by the sub-chiefs, the earth priest/ executioner, the elders, the women's leader, family heads and the households,

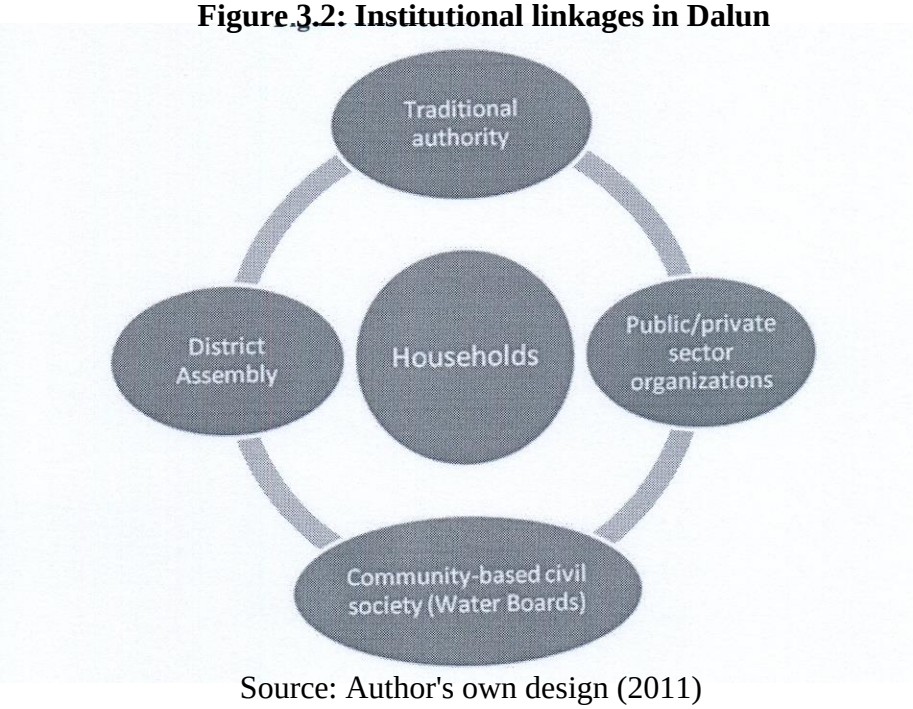
Figure 3.1 Hierarchy of Traditional Political Authority in the Dalun Area



Source: Author's own design (2011)

The traditional political system is the main source of authority in the local decision-making process. It is characteristically male dominant (Apusigah, 2004; Bukari, 2009), and plays a major role during the community entry stage for external development intervention, such as the TSP. There are linkages between the traditional system and the modern institutional set-ups illustrated in figure 3.2.

Figure 3.2: Institutional linkages in Dalun



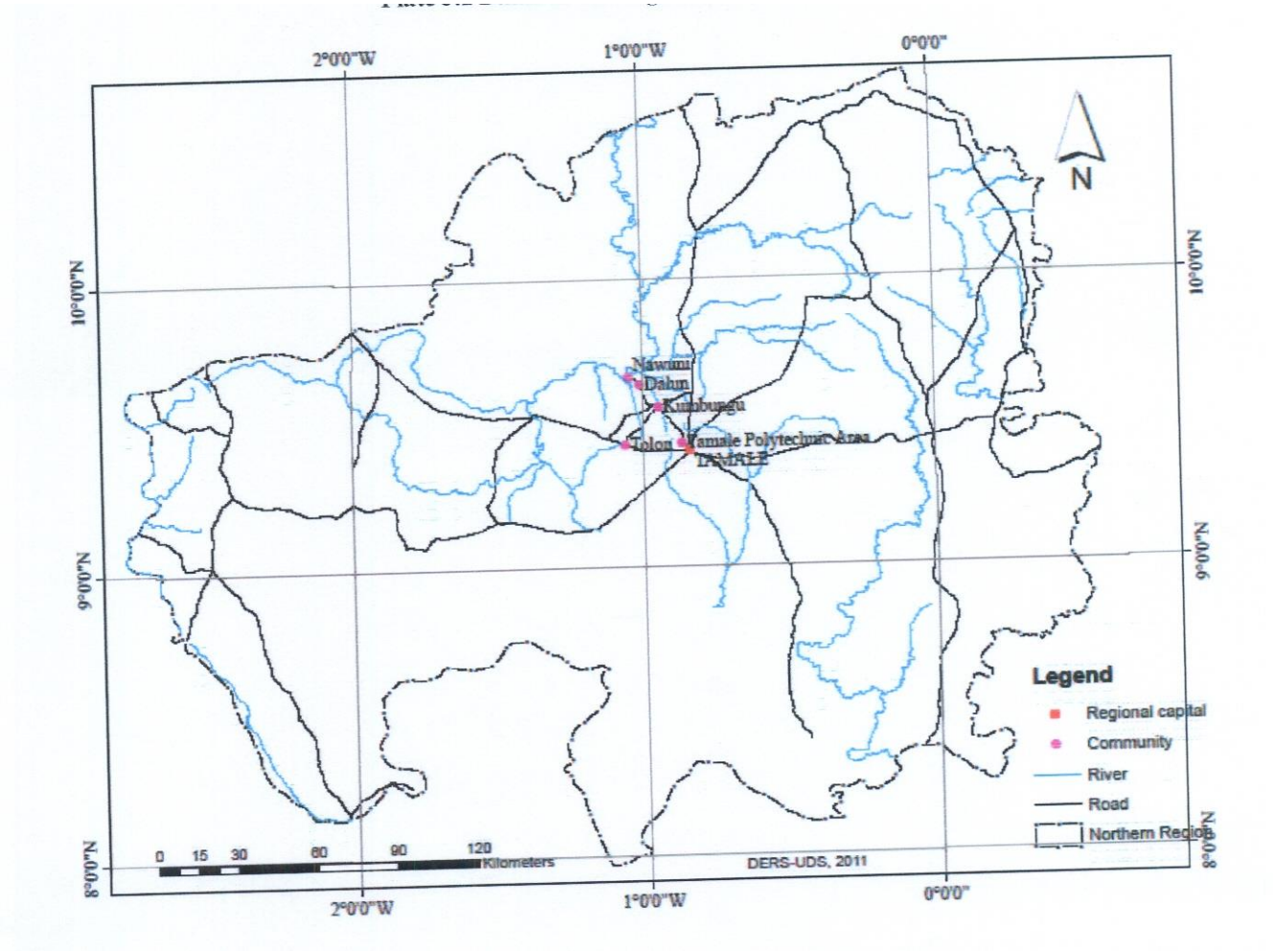
Source: Author's own design (2011)

Figure 3.2 shows a radial instutitional relationship in Dalun. The Traditional Authority, made up of the chieftaincy institution constitutes the mouth piece of the people, which should be consulted in all issues relating to local participation in development, especially during the community entry stage (Twumasi, 2001). The District Assembly (DA) is the mode political authority that defines and encourages public-private sector participation in community development, and the role of the Community Water and Sanitation Agency (CWSA) as a component of the DA was important in diagnosing the challenges of water services in the Dalun community during the TSP initiation period (GPRS, 2002-2004). Civil society organizations, either already existing or newly formed, are to advocate for inclusion by voice and present the expressed needs of households, which constitute the basic units of the society and are the paramount determinants of the success or failure of development projects through behavior (Kendie, 1992; Whittington, 1998; GPRS, 2002-2004).

Plate 3.2 shows Dalun in the regional context. It emphasizes on its advantageous position in terms of the network of river systems constituting an environmental resource, and which could influence negative attitudes towards the willingness to pay for water, despite increasing

investment cost but a potential for the introduction of low cost technologies for pro-poor water services.

Plate 3.2 Dalun in the Regional context



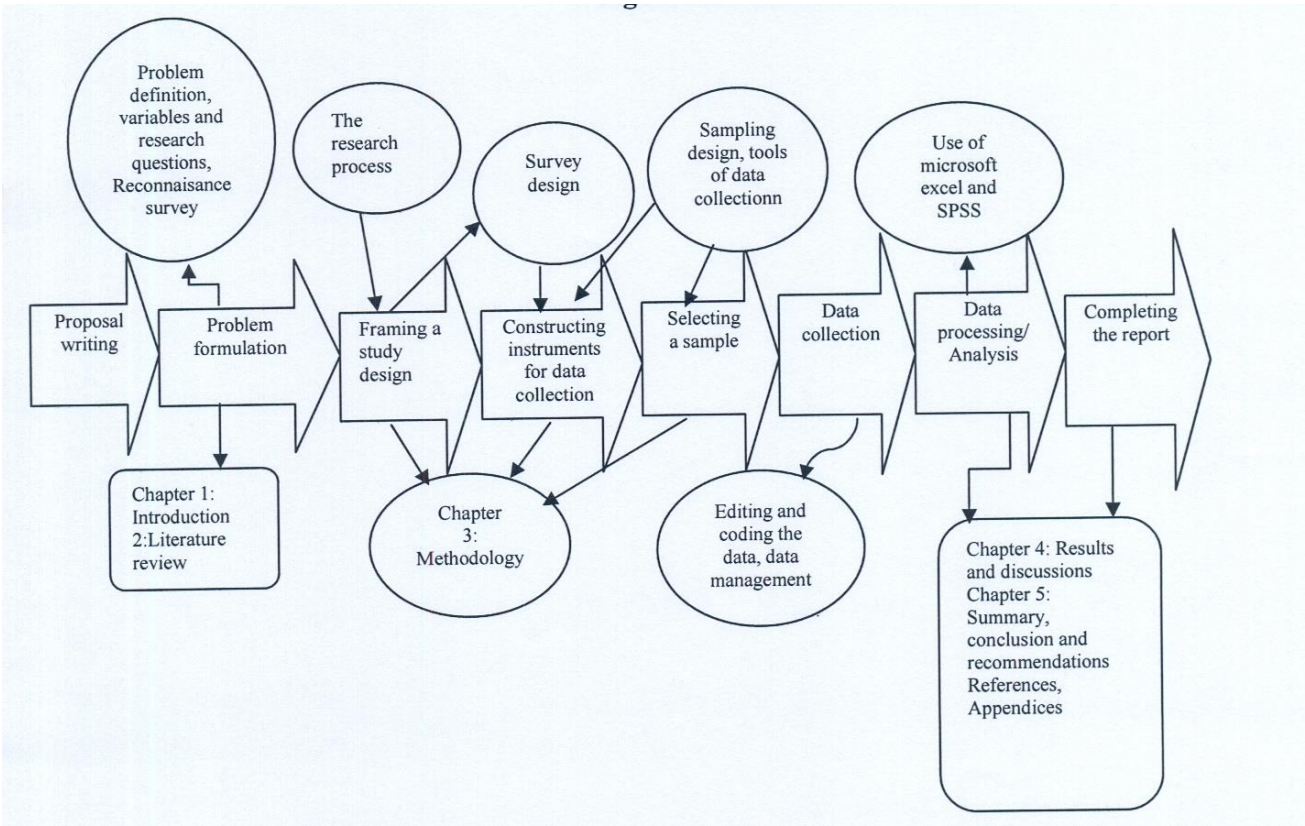
Source: DERS-UDS, 2011

How the changing patterns of the institutional linkages in Dalun influenced household attitudes towards the willingness to pay, under the PPP water delivery models before and after the TSP intervention constituted the central basis of this study. The next section presents the methodological procedures executed in the context of this profile of Dalun.

3.3 The Research Process

This is an indication of the step-by-step approach to the study, which indicates how the research was conducted from the beginning to the end (Kumar, 1999; Twumasi, 2001). Figure 3.3 is a summary of the research process. It follows the eight- step model conceptualized by Kumar (1999) with some modifications.

Figure 3.3 The Research Process



Source: Modified from Kumar (1999).

Key:

▭ Associated chapters ⬭ important features ⇨ Stages of the Research

Figure 3.3 represents the modified eight-step model of the research process as conceptualized by Kumar (1999). The steps are listed as follows:

Step I: Proposal writing

Step II: Research problem formulation

Step III: Framing the study design

Step IV: Constructing instruments for data collection

Step V: Selecting a sample

Step VI: Collecting data

Step VII: Processing the data

Step VIII: Writing a research report.

The next sections present discussions of how the research process was actually executed with modifications where necessary.

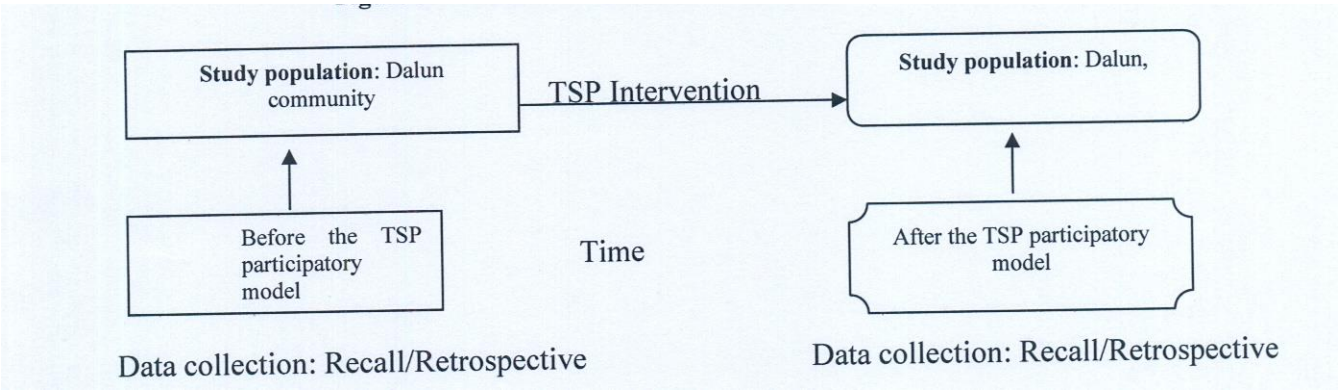
3.3.1 The Study Design

The explanation of Figure 3.3 starts from the study design. The main study design was the *Before- and- after* study design (Kumar, 1999). This facilitated the measurement of change in terms of participatory management of the tariff collection process and the associated attitudinal change in the area. The water tariff management situation *before* and *after* the TSP intervention was assessed using retrospectice questions; that is by designing questions that encouraged retrospective responses. Investigations based on the before intervention stage were mainly descriptive; that is by looking at the situation of potable water services in the communities under the existing relationship between the communities and the public-private partnership (GWCL/AVRL) service provider. In other words, the *pre-test* study examine the tariff collection situation without the effects of the independent cause variable for change (Kumar, 1999); namely the TSP participatory model. The year 2006 was chosen as the period of reference (before the TSP). This is because the PPP contract between the GWCL and AVRL was signed in 2005, but it was in 2006 that the co-operation between the two partners commenced (DERS, 2010). Attention was focused on old community water management structures and their effects on tariff collection and the level of interaction between the structures and the service provider (GWCL/AVRL).

In the *after* intervention stage the year 2008 was selected as the period of reference because the TSP agreement was signed in 2007 as donor conditionality for the TWOP (SNV, 2009), but it was in 2008 that the community Water Boards commenced the independent management of the

water system and water tariff collection in particular in Dalun after their capacity building, The approach was *explanatory* (Kane, 1995). That is the researcher took into consideration the presence of an independent change variable or causation (the TSP). This stage of the study was interested in how the TSP model has influenced the performance of the community structures terms of tariff collection. This design is summarized in Figure 3.4.

Figure 3.4 The Before -and-after study design



Source: Redrawn from Kumar (1999)

In Figure 3.4, the left hand side represents the TSP pilot communities before the intervention. The Participatory model, involving the capacity building of civil societies (Community Water Boards), and redefining their roles is now introduced, giving rise to the situation expressed in the right hand side of the figure (after intervention). The study determined the situations in both cases, and found out whether the participatory model of the TSP has brought about any change in water revenue generation in the study area. However, for careful planning and implementation of any process, some first hand information is needed. This was catered for by a preliminary survey.

3.3.2 Reconnaisance Survey

Before obtaining the ideas on the research problem and the writing of the research proposal a preliminary survey was embarked upon at the TSP pilot community of Dalun between October and November 2009, as well as visits to the relevant TSP partner organizations (GWCL, SNV and Pragmatic Out-comes Incorporated). The purpose of the preliminary survey was to acquaint the researcher with the exact number and location of the various zones of the community depending on public standpipes and also represented in the TSP, for the purpose of cluster

sampling, as well as the existing organizations for easy accessibility during the actual survey, to observe the potable water situation in terms of physical infrastructure by a community walk (Millar, 2007) and evidences of community participation in water tariff collection. This facilitated the selection of Dalun Station, Dalun Nayili Fon and Dalun Kanbong Naa Fon by simple random sampling for this study (Kane, 1995) as described later in this chapter. The organizations and the local/traditional authorities at the community level were informed about the intention to undertake the study. The researcher also took this opportunity to ask for any relevant institutional reports relating to the subject matter, to serve as secondary data. This phase of the survey was to provide some useful information about what other water related issues should go into the study (Bacho, 2001) to enrich the answers to the research questions during the discussion of results.

The determination of which type of sampling technique and/or which data collection instrument will work best or not for the different respondents was made possible through the reconnaisance survey. Furthermore, successful community research work also depends on good community entry skills (Twumasi, 2001). The initial survey therefore acquainted the researcher with some basic knowledge of the cultural values and norms of the communities; including status and authority symbols and taboos. It was also possible to determine the right time to carry out a household survey by knowing the time- related activities, and in a broader scope the gender calendarity. This was to avoid waste of time, energy and resources through inappropriate timing for data collection.

3.3.3 Survey Design

This thesis made use of both descriptive and analytical survey designs (Kane, 1995) in relation to the before-and-after the TSP intervention respectively. The descriptive survey aimed at presenting a picture of the tariff collection situation under an earlier model of water services in Dalun, while the analytical survey was applied to the examination of the effects of the TSP in pro-poor water tariff collection in the area. Survey design involves a good knowledge of what you want to learn (the research idea), and determining your sampling methods for the selection of those you want to study, the tools you would use for obtaining your data from those being studied, pretesting of the tools, administering the tools, processing and analyzing the data and the production of the

project report (See Kumar, 1999; Twumasi, 2001). The subsequent sections below are a break-down of the survey design.

3.3.3.1 Sampling Design

Among other considerations, a research scientist must be able to outline the parameters of the population he wants to study (Twumasi, 2001), and this is achieved through sampling design. "Sampling design denotes all the stages and processes involved in reaching the respondents" (Kish, 1967, as in Twumasi, 2001: 19). It is also the process of selecting representative items from a universe (a group of items), examining those selected items and drawing a conclusion about the entire universe based on that examination of the selected items (Branner, 2007). Cluster sampling design was adopted for this study (Kumar, 1999). By this, the researcher identified the five zones of Dalun as separate clusters, from which three were randomly selected for the cross-sectional study. The purpose was to ensure efficiency in the research process by establishing a balance between accuracy, efficiency and cost- effectiveness that could bring about quality in the research results (Branner, 2007).

3.3.3.1.1 Non-probabilitiy sampling

The *purposive* method was used to select relevant officials from each of the Tri-sector Partners, such as the project and commercial unit officers of the Ghana Water Company Limited (GWCL), the SNV officer in charge of community water projects, the officials of POI who were responsible for the capacity building of the Water Boards and the leadership of the community Water Boards and other community opinion leaders, such as the Assembly Person as key informants. This is because by virtue of their expertise, such respondents could give first-hand information that was used for effective data triangulation, thus providing a check for the accuracy and validity of data obtained from the household level. The *snow-ball* method was used to identify houses that depend on selected public stand-pipes (the last respondent indicates which other house uses water from a public standpipe), (Kumar, 1999), and respondents at the household level selected by accidental sampling (first -come-first- served principle). For the selection of the stand-pipes was based on serviceability, availability of records on water bills and receipts of payment (for a year before and after the intervention-ie 2006 and 2008). This information was obtained from the GWCL/AVRL Station Officer- Kumbumgu (which is

the main service area under which Dalun falls), and then printed copies of water tariff data obtained from the customer service unit of the GWCL/AVRL office- Tamale (see plates 4.1, 4.2 and 4.3).

The results of the snow-ball method produced a total of 128 houses depending on public stand-pipes: 50 houses for Dalun Station, 48 for Dalun Nayili Fon and 30 for Dalun Kanbong Naa Fon (Source: Key informant interview with Assemblyman-Dalun), which was consistent with the customer records obtained from the GWCL. This population of houses was above the required sample size of 80, and so provided the basis for probability sampling to minimize size but ensuring representativeness (Kumar, 1999) as described below.

3.3.3.1.2 Probability sampling

Cluster sampling was carried out to select three zones out of the nine zones in Dalun (Table 3.1) after short-listing six with good water tariff records and evidence of Water Board activities. Codes were assigned to each zone, and the fish-bowl method used to select three, namely Dalun Station, DalunNayiyli Fon and Dalun Kanbong Naa Fon (Kumar, 1999; Twumasi, 2001). These three zones had a total of 128 houses. Using the simple random sampling to select the sample size of 80 from the total of 128 population of houses, codes were assigned for the identification of houses from each zone. Thus, the 50 houses for Dalun station were coded from DS-1 TO DS- 50, the 48 houses for DalunNayiyli Fon from DN-1 to DN-48, while the 30 houses for Dalun Kanbong Naa Fon also stood from DK-1 to DK-30.

A master list containing the names of the houses was prepared for the purpose of reference. All these house codes were written on pieces of paper and put into a container, then picking one-by-one after each shaking until 80 codes were selected. The master list was then re-visited for the identification of the houses whose codes were selected at random. One household head was selected accidentally from each house for questionnaire administration (Kumar, 199l). This was to avoid the waste of time and energy in moving to places that are irrelevant, but ensuring representativeness, while the cluster sampling technique had the advantage of cost reduction (Kish, 1967). By this method, Table 3.2 shows the zones that had a majority of houses making use of public standpipes had greater representations from the total of 80 household respondents.

Table 3.2 Random Sampling of Houses for Respondents

Zone	Number of Houses	Number of Houses Selected by Randomization (fish-bowl)
Dalun Station	50	30
Dalun Kanbong Naa Fong	48	28
Dalun Nayili Fong	30	22
Total	128	80

Source: This study, 2011

Accordingly, Dalun Station had 30, Dalun Kanbong Naa Fon 28 and Dalun Nayili Fon 22. Once in a house, the first household head to meet was selected to represent all other households in that house using the *accidental sampling* technique (Kumar, 1999). The sample size of 8 constituted 62.5% of the total sample population of 128 houses. Non-statistically, the excess of the sample size over 50 reduces biasness (Branner, 2007). Thus a sample size of 62.5% of the population is reasonable because the greater the sample size the greater the degree of reliability of findings (Ola-Omi, 2009). The probability sampling process was successful due to the adequate definitions of the sample population and sample frame as done below.

3.4 Definition of the Sample Population, Sample Frame and Sample Size

3.4.1 The sample population:

The total population of Dalun is about 3,658 (2000 Population and Housing Census of Ghana). However the sample population comprised all households in houses that depend on public standpipes in Dalun. Characteristically this is a settlement closer to the Tamale Metropolis, but more rural with a population that is largely agrarian (Seini, 2002). Such areas tend to have lower average household incomes, the flow of which is seasonal (Kendie, 1994; Osei, 1983; SNV, 2009), and are accordingly associated with poverty. Dorosh and Sahn (1993) established that 80% of the poor in Ghana live in such areas. These characteristics of the study area were of interest in determining the attitudes of households towards the payment of water bills, hence the pro-poor orientation of the study. The large nature of the population in view of available time

and resources necessitated the need to identify a sample frame for the selection of the elements of study as considered in the next section.

3.4.2 The sample frame

This consisted of all households in the Dalun and in the three selected zones randomly selected as clusters for cross-sectional study (Kumar, 1999), who use water from public standpipes, namely *Dalun Station, Dalun Nayili Fon* and *Dalun Kanbon Naa Fon* (made up of households in the 128 houses), as well as officials of the TSP partner organizations, community key informants (such as the Assembly persons) and the leadership of the Community Water Boards. To operate within the limits set, it was required to carry out further down-scaling of the sample frame (Kish, 1967) by methodologically selecting a sample size as shown below.

3.4.3 The sample size

Eighty (80) questionnaires were administered to a *sample size* of 80 respondents from the 128 houses in the three zones of Dalun selected for the study. However, the number of respondents from each zone was proportionally related to its size (Twumasi, 2001) using the sampling procedures as discussed earlier, in terms of population of houses that depend on public standpipes (See Table 3.2). The determination of the sample size was by a non-statistical sampling method, in which the researcher adopted a rule of thumbs or based on professional-judgement (Branner, 2007). In other words this method presupposes that a sample size of 50 or more can avoid serious biases, and a sample size of 100 or more ensures certainty of the normality of assumptions. Using the simple random sampling techniques described earlier, all elements were given equal chances and there was a reasonable proportionate coverage of the study population to ensure accuracy. The selection of the sample size reduced the problems involved in studying the whole population given the time and resource constraints (Kumar, 1999), in order to arrive at generalizations. Once the sample size was determined, the next activity was the determination of the sources of data.

3.5 Sources of data

This section looks at the main sources from which data was obtained to answer the research questions. There are basically two sources, namely primary and secondary as discussed below.

3.5.1 Primary sources

First-hand information on the participatory management of pro-poor water tariff collection was obtained through the application of tools such as questionnaires, interviews, discussions and observations (Ola-Omi, 2009). These provided qualitative and quantitative data for presentation, and the analysis, and aided by the secondary sources considered below.

3.5.2 Secondary Sources

Available documentations or literature on pro-poor water services were obtained from the TSP organizations in Tamale such as SNV, POI and GWCL/AVRL. Books, newspapers, journals and the internet were also resorted to for information. This was to facilitate comparative assessment of the participatory water tariff collection process by the relationship between the primary data and what was ever done elsewhere on similar problems (Kumar, 1999).

3.6 Tools for Data collection:

Below is the description of the specific tools that were used to collect data from the sources discussed above.

3.6.1 Questionnaire

Structured questionnaires were used for the collection of information from the household level to facilitate quantitative analysis. 80 questionnaires were administered to household heads, which were selected by a combination of simple random and purposive sampling techniques as described earlier. Each questionnaire had a combination of 50 open and close-ended questions with blank spaces to fill in responses or options for respondents to select by ticking respectively (See appendix i). It was divided into eight subsections (from A to H) that incorporated the socioeconmic backgrounds of the respondents and the study objectives. The use of questionnaires facilitated data collection to cover the entire scope of the study and for quantitative measurement of variables (Twumasi, 2001), with moderately high measurement validity and provided for exploration and confirmation (Ola-Omi, 2009).

However, the short nature of responses did not provide detailed explanations to the phenomena under study and omissions could also affect the validity and accuracy of findings (Ola-Omi,

2009). These problems were addressed by a number of ways. First there was an effecttive training of research assistants, with emphasis on the best interpretation of the questions in the local language for the understanding of illiterate respondents as well as how to use probing questions in cases where the respondent had no answer or option to choose. About 10 questions also pre-tested at areas of public water services around the Tamale Polytechnic. This facilitated early detection of wrongly worded questions and those that could be difficult for understanding, and amendments were made. Also field cleaning of data, appropriate timing for administration of the tools, and triangulation with other tools (one of which was by interview) were other ways of ensuring the quality of data obtained from the questionnaires (Twumasi, 2001).

3.6.2 Interview

The qualitative type of interview was adopted for this study. During the preliminary survey, informal conversational interview was conducted at the community level to obtain information about observable issues related to potable water management (Millar, 2007). During the actual survey, interview guides were constructed using standardized open ended questions (see appendix ii). The objectives of the study, which determined the key analytical themes guided the order of the interview questions (Ola-Omi, 2009). Key informant interviews were conducted at the institutional levels. Interview guides were constructed to obtain information from relevant officials of the TSP (including the GWCL Project Officer, the GWCL/AVRL Distribution and Project Managers and the Customer service Officer, the SNV Officer in charge of Water Projects, the GWCL Station Officers at Kumbungu and Dalun, and Assembly Person of the study area). These were selected by purposive sampling as described earlier.

The use of interview was to ensure in-depth explanation of key variables, as respondents hold positions that are relevant to the needed information. However, the analysis of data from interviews was time consuming and the measures needed validation (Ola-Omi, 2009). These problems were solved by making sure that the use of interviews were not very extensive; they were used for reliable sources of relevant information only. The results of questionnaires and interviews offered very little cross-sectional views given the diverse backgrounds of the people in the population. It became necessary therefore to adopt a tool that met this requirement, such as focus group discussion as discussed below.

3.6.3 Focus Group Discussion (FGD)

Six men and six women in each zone, and another group of six comprising a man and a woman from each of the three selected zones (for three men, three women) who were members of the community Water Boards, users of public standpipes and other locally influential people (LIP) were gathered to provide detailed discussions of the basic issues of the study, such as the relationship between the Water Boards and the public- private sector organizations of the TSP, as well as the community members and the tariff collection situation, before and after the TSP intervention (see appendix iii). Apart from the opportunity of exploring ideas and obtaining indepth information about how people think about the potable water situation in the community, this tool incorporated cross-sectional views into the data (Kumar, 1999).

One limitation to the use of FGD is that it cannot be used alone, and measurement validity may also be low (Ola-Omi, 2009). This explains why it was necessary to collect data with the other instruments already described above before the use of FGD as a way of ensuring methodological triangulation (Kane, 1995). In all the above methods of data collection, respondents told the researcher about what they see, think or do. The extent of the realities of these claims could only be reached when the researcher convinces himself/herself by observation.

3.6.4 Observation

By observation, the researcher got to know the prospective respondents, and started to observe the locations of the public standpipes and the responsible Water Board members, as well as the tariff collection process, in order to confirm the answers to the research questions obtained from other tools (Twumasi, 2001). During the actual survey, qualitative observation was used as usual, but this time using the participant as observer approach (Ola-Omi, 2009), in which extensive time was spent with the people as they were being observed openly. As a method, Participant observation is a useful one in the collection of field data. Since the study community is rural with the illiterate majority who cannot read and write, this method was very useful (Twumasi, 2001), because it reduced the problems involved in reading and interpreting printed questionnaires and interview guides. It also allowed the researcher to see for himself what the people do without having to rely on what they say they do (Ola-Omi, 2009).

However, reasons for observable behavior may be unclear and could also lead to the investigator effect (as people change their attitudes when they know they are being observed). These problems were minimized through triangulation of the observable situations from cluster to cluster, and by comparison to other research findings through a review of relevant literature as considered below.

3.6.5 Secondary data/ Literature review

All the above tools yielded primary data or first-hand information. Additionally, data was obtained through the use of secondary information or available literature from textbooks, organizational records and reports, journals and internet search. The literature has been arranged under the key themes of analysis in chapter two. This enabled the researcher to measure the degree of accuracy of findings according to consistency with previous research findings in similar fields of study (Kumar, 1999). The secondary data also facilitated the development of the theoretical and conceptual frameworks as seen earlier, and from which the analytical framework was constructed to guide the analysis of the data as illustrated in a later part of this chapter,

3.7 The Scope of the Study

This study focused on an institutional and behavioural assessment (Munashinghe, 1992) of the TSP model of pro-poor water services in the Northern Region of Ghana with the Dalun community as a case study area. The study was *not* to examine all aspects of pro -poor water services, but to examine the operationalization of a multi-sectoral model known as the Tri-sector Partnership (TSP), in pro-poor water tariff management with emphasis on the incorporation of community participation in the tariff collection process through community Water Boards. Geographically, the Dalun community is considered to be along the Dalun-Tamale Corridor, which is located at about 30 kilometers to the north-western corner of the Tamale Metropolitan City. Other pilot communities for the TSP participatory model along the corridor include villages around the Tamale Polytechnic area, Kumbungu, and Bontanga. Characteristically these communities are located along a fresh water intake valve from Nawuni in the Tolon -Kumbungu District to Tamale (TWOP Report, 2007-2008). These areas are rural, with agrarian populations that have low average household incomes (POI, 2008), and the water service have been designed to suit their socio-economic backgrounds. There are mostly public stand-pipes rather

than private connections, collective responsibility or cost sharing for facility maintenance, generally low tariff rates, and until recently the public stand-pipes were not metered (TWOP Report, 2007-2008).

Thematically, the study examined the changing patterns in community participatory water delivery services in a pro-poor perspective in the study area, by comparing the period before the TSP intervention and the period after. Main areas of attention were on the factors that influenced the formation of the TSP, the incorporation of community Water Boards in the tariff collection process and the effectiveness of the Water Boards in the tariff collection process. For the purpose of measurement, the research depended on relevant quantitative variables such as monthly water bills for the year 2006 (immediately before the intervention of the TSP) and the year 2008 (immediately after the intervention).

Methodologically, the research work leaned heavily on a before -and -after study design (Kumar, 1999) to examine the state of water delivery services in terms of the level of community or civil society participation under the PPP (the public-private sector being represented by the GWCL/AVRL, and some NGOs like SNV and POI, and the community level by the Water Boards). It involved retrospective deductive approach for the first phase (before the intervention) and retrospective phenomenological analysis for the second (After the intervention). But the two phases were executed concurrently with the same tools (Kumar, 1999; Kane, 1995).

Theoretically, the study did *not* depend much on quantitative approaches such as the cost-benefit analysis. It was simply an institutional and community behavioral assessment that was to reflect the social benefits of an intervention, which could not be quantified to warrant quantitative economic assessment techniques. The indirect approach of measuring household wilingness to pay for water, that is, Water Use Behaviour was adopted (Munasinghe, 1992). Theories of community participation were used to guide the analysis. The major theory chosen for the analysis of findings was the Community Organizing Model (Rothman, 1969). The research focused on how the PPP without the intensification or emphasis on civil society participation (such as POPO), affected the interests of the community and the public-private sector stakeholders in terms of the key objectives, and how the incorporation of civil society

participation brought about changes in the community and public-private stakeholders' attitudes and interests. The latter case presents a picture of the TSP, which is the participatory model assessed for its effects on the tariff collection process. The totality of the scope reflected in the unit on the presentation and analysis of data.

3.8 Presentation and Analysis of Data

The processing of the data was done with a combination of manual and computer methods and *presented* in the form of tables and charts, to facilitate easy comparison (Alan and Franklin 2007) of the pro-poor water tariff situation before and after the TSP intervention. Karma (1999), considers *data analysis* as the computation of certain measures along with searching for patterns of relationship that exist among data-groups (Karma, 1999; as in Tanko, 2008). This includes summarizing the data collected and organizing them in such a manner that they answer the research question (Yin, 1993). The analysis was under the five major analytical themes derived from the analytical framework described below. The use of qualitative and quantitative data obtained from primary and secondary sources was very important in the analytical chapter

3.8.1 Analytical variables

During the analysis of the data, the analytical variables for each analytical theme were also identified and classified into (i) independent variables; which were responsible for influencing change such as community participation, occupation and income level, (ii) dependent variables; which were brought about by changes in the independent variables such as the willingness to pay for water, performance of Water Boards in tariff collection and service quality, (iii) control variables; which influenced the effects of the independent on the dependent variables such as how the roles of the Water Boards influenced willingness to pay among the various income and gender groups and under the various models (See Kumar, 1999; Twumasi, 2001). The relevant variables used for each analytical theme have been indicated under it in the analytical framework section.

3.8.2 Manual and computer applications

Most tables were constructed manually before using the computer, especially secondary quantitative data such as monthly water bills. The use of the computer called or a clear identification of the categories of the quantitative data to be fed into the computer (Twumasi, 2001). This was analyzed and presented using the Statistical Package for Social Sciences (SPSS) and Microsoft excel to draw statistical relationships between variables in the administered questionnaires, using cross-tabulation under descriptive statistics (See Miller, 2007). Accordingly, the 50 questions on the household questionnaire were arranged under sub-sections in correspondence to the research objectives. Options were given for each question and numerical codes assigned to them thus 01, 02, and so on. The data from the 80 administered questionnaires and the codes were then fed into the variable and data view components of the SPSS version 16 respectively for storage and used during the analysis (Twumasi, 2001).

During cross-tabulation in SPSS analysis, the independent variables were presented in the columns while the dependent variables were in the rows. For graphical illustrations, their values were plotted on the X and Y axes respectively. This made it possible to measure the relationships that existed between the variables by their frequency distributions and other measure of central tendencies such as mean, modal and median scores using percentages or absolute numbers (Kane, 1995).

3.8.3 Adopted measurement scales

Additionally, the researcher also identified and applied two main types of measurement scales, namely the nominal and ordinal scales. The nominal scale applied to items that were found to be of the same level and could not be ranked, such as the zones of a community, models of water delivery services over time, behavioural factors among others, while ordinal data were those that could be ranked, such as income levels of respondents, various tariff rates households were willing to pay and the performance of service delivery models (See Kane, 1995; Twumasi, 2001). This facilitated the choice of other appropriate statistics to establish relationships.

3.8.4 Statistical applications

Though the study depended on research questions and objectives rather than hypotheses, statistical applications became necessary for the measurement of the strength of the relationships between dependent and independent variables, as well as the effects of a control variable on the relationship between the independent and dependent variables by cross-tabulation and contingency tables respectively (Kane, 1995; Twumasi, 2001). This is known as correlation (Korey, 2010). For instance, the Bivariate, Partial, Contingency, Pearson and the Lambda correlation Coefficients were used for nominal data (or nominal and ordinal data), while the Gamma and the Kendall's tau were used for ordinal data (Haberman, 1978; Kane 1995). The computation of values for these statistical measures was simply by computer commands and based on the data stored in the SPSS version 16, and all have the same purpose (correlation); the differences being by the measurement scales they are meant for as given above and formula (the latter was also catered for by computer command in this study).

The strength of a relationship between variables depends on the absolute values of the correlation coefficients and the approximate statistical significance (Kane, 1995). Correlation coefficients have absolute values that range from -1.00 to + 1.00. The value of -1.00 represents a perfect (100%) negative correlation while a value of + 1.00 represents a perfect (100%) positive correlation. A value of 0.00 represents a lack of correlation (0% relationship). "We generally consider relationships that have less than a 5% probability of occurring by chance ($p < 0.05$) as being significant" (Kane, 1995: 299). This is the approximate significance of a statistic. For example, a correlation coefficient of 0. 7 (70%) is stronger than 0.4 (40%), while one of 0.1 or 0.2 is weak. Approximate significance between 0.04 to .001 provide a condition for the acceptance of a relationship as there is statistical significance (within p). Apart from the use of the SPSS for the statistical computations, tabulation and graphical illustrations, some appropriate statistical diagrams were also selected from the Microsoft office excel (2007 edition) for data presentation.

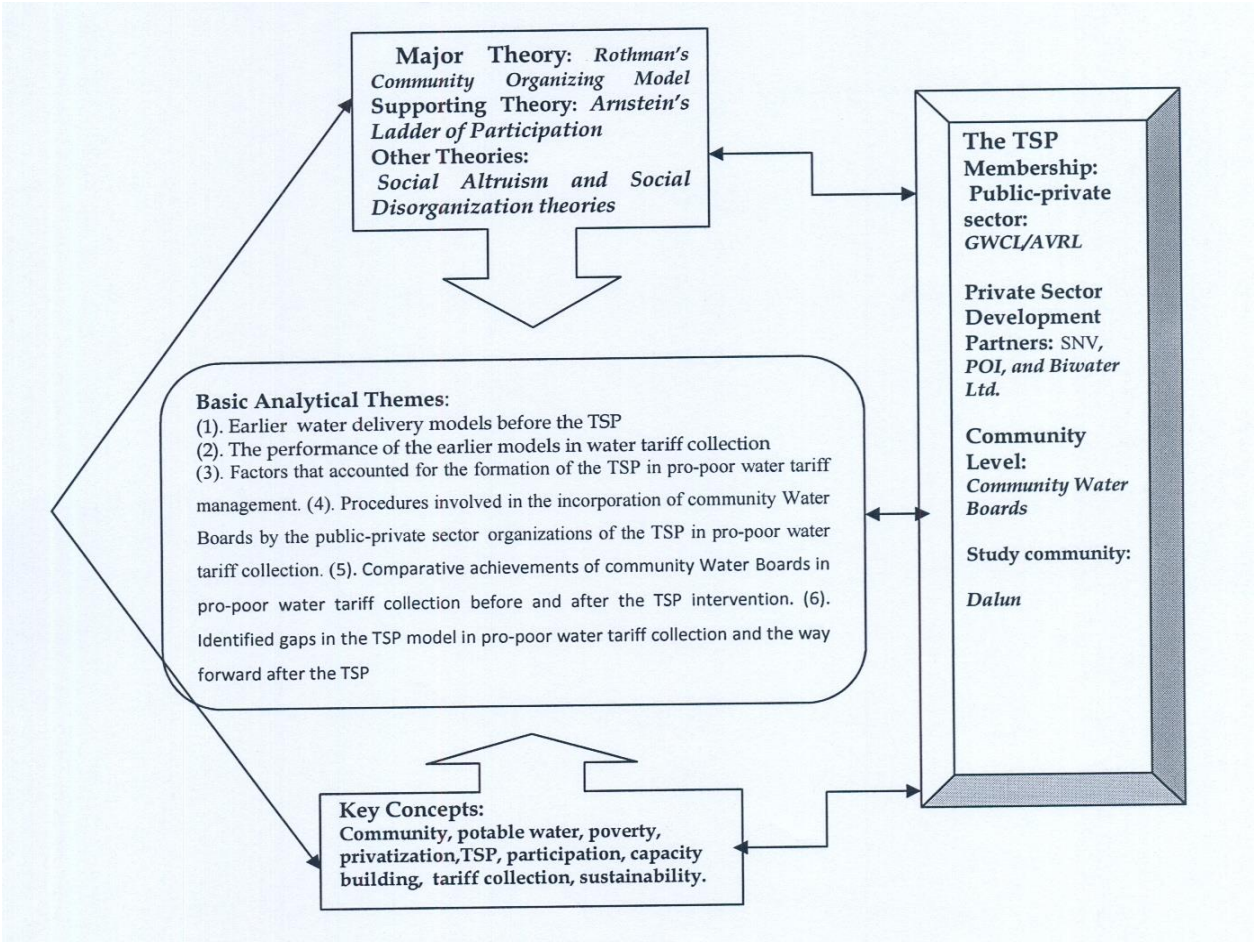
The justification for the use of these computer methods was to ensure "clarity in expressing quantitative relationships in the form of graphs, frequencies, cross-tabulation among others" (Millar, 2007: 24). It also helped to incorporate the contingent valuation method into the analysis

of the data from the same household questionnaire without the creation of a separate one for that purpose (See Whittington, 1998).

3.9 Analytical Framework

This section looks at the inter-relationships between the theoretical, conceptual and the basic analytical themes derived from the research questions and objectives (Shani, 2008). In other words, it shows how both the reviewed literature and primary data agreed or disagree in the analysis or measurement of key variables under the objectives or analytical themes.

Figure 3.5: Analytical Indicators



Source: Modified from Shani, 2008

Figure 3.5 is an illustration of the analytical framework, in which the key analytical indicators have been specified. The operationalization of the framework for each basic theme of analysis, gives the derived analytical themes expressed below.

3.9.1 Locality Development by Information Giving through the Review of Earlier Water Delivery Models before the TSP

Under this first analytical theme, the following issues were of central consideration:

- An examination of earlier models of water delivery services

This theme was looked at using the stages of Locality Development and Citizen Non-Participation under the Rothman's Model (1968) and Arnstein's Ladder (1969) respectively. Models such as the POPO, PSP and PPP were well examined in the context of low income communities. Data was presented by cross-tabulation with the zones of the community as the independent variables while the various models of water delivery services and willingness to pay were dependent. The nominal nature of the variables called for the use of the coefficient as the main statistic. This paved the way for the assessment of their performance as considered in the next section.

3.9.l Locality Development by Manipulation through the Assessment of the flerformance of the Earlier Models in Water Tariff Collection

The major considerations under this section were:

- The tariff collection process under the earlier models before the TSP
- The performance of the earlier models in the tariff collection process before the TSP
- Previous coping strategies

The theories of Social Disorganization and Social Altruism (Byron and Robert, 1989; CJPR, 1999) were applicable here in the qualitative measurement of extraneous variables such as the average household income and the percentage of people willing to pay for water at a specified quantity at a given tariff rate (Kumar, 1998). The main concept was the effectiveness of earlier models in water tariff collection. Also, the three zones of Dalun and the period before the TSP (2006) constituted the independent variables while *collected water tariffs* constituted the dependent variable. The nominal-by-ordinal nature of the variables also necessitated the use of

the Pearson, the Gamma and the Kendall's tau correlation coefficients for the measurement of their relationships.

3.9.3 The Influence of Social Planning by Placation and Partnership on the Factors that Accounted for the Formation of the TSP in Pro-poor Tariff Collection.

The third objective of the study was measured under this theme by considering the following areas:

- The institutional framework for water management before the TSP
- Reasons for the formation of the TSP
- The roles of the TSP membership
- The formation of the Water Boards

This theme was analyzed using the stage of Social Planning under the Rothman's Model (Rothman, 1968). It was aided by the stage of Tokenism of the Arnstein's Ladder (Arnstein, 1969) as well as the Social Disorganization and Social Altruism theories (Byron and Robert, 1989; CJPR, 1999). This section examined how the application of the concept of the TSP progressed from the stage of tokenism to placation, with a view to influence the relationship between various aspects of participation and the sampled zones as independent variables, tariffs collected and the influencing factors after the TSP period (2008) were the dependent variables (Kumar, 1999).

3.9.4 Social Action by Delegated Power for the Incorporation of Community Water Boards in the Pro-poor Water Tariff Collection Process.

The analysis of this theme measured the fourth objective of the study. This was made possible by the examination of the following:

- Determination of the pro-poor water tariff with the participation of the Water Boards
- Capacity building of the Water Boards for the Tariff collection process
- The participatory tariff collection process

The stages of Social Planning and Social Action of the Rothman's (1968) model were applied to the examination of the tariff determination and collection processes. The concepts of consultative, functional and interactive participation, as well a pro-poor tariff determination also proved useful in this section of analysis.

3.9.5 Assessment of Social Action through the Performance of the Community Water Boards in the Tariff Collection Process as Citizen Control.

This stage of the analytical unit was based on the measurement of the fifth objective of the study, and the key analytical considerations were:

- The water tariff situation after the TSP intervention
- Factors that accounted for the tariff situation after the TSP
- Effects of the change in the tariff situation after the TSP

Of particular importance at this section of the analytical unit was the stage of Impacts Evaluation under the Kathy's participatory management model (Kathy, 1999). The concept of sustainability and lessons learned, as well as policy implications of the findings of the study were considered under the summary and conclusion chapter.

Quantitative secondary data on monthly water tariffs for a year before and a year after the TSP intervention (2006 and 2008 respectively) were obtained from the GWCL (Tamale),to facilitate comparative analysis. This is because the TSP in the area was a one year pilot project (SNV, 2007/2008), hence any data that falls outside this range would not best reflect the TSP's performance in the specified area of study. Thus, the main concept measured is the effectiveness of the new TSP model in water tariff collection. The same independent, dependent and control variables, as well as the correlation statistics measured for the earlier models wer considered here, but this time under the influence of the TSP.

3.9.6 Identified Gaps in the TSP Model of Pro-poor Water Services

This section looked at the weaknesses, lapses or challenges of the TSP model that might have accounted for its inability to adequately fulfill its objective of maximising the welfare of the poor in terms of water use with value for money. The following issues are worth considering.

- Institutionally related problems of the TSP
- Problems related to the level of community participation
- Legality of the participatory process
- Commitment to the TSP agreement

The information obtained on the gaps in the TSP model shall served as the basis of its modification or conceptualization of a new model as an alternative to the TSP to make the way forward.

3.10 Data Management: Validity, Reliability, Accuracy, and Precision

A scientific study requires thorough reflection over the methodological choices. This reflection takes into consideration the reliability and validity of the overall study (Shani, 2008). By the validity of the study, the researcher ensured that all methodological and analytical procedures were as sound as possible (Kane, 1995), guided by secondary information on previous successes in similar studies.

By reliability, frantic efforts were made to minimize errors by strict adherence to the defined sampling and analytical procedures. Care was taken to avoid leading questions that influence respondents' answers. Research assistants were also adequately trained to avoid unprofessional practices such as answering questions by themselves on respondents' behalf (Twumasi, 2001).

Accuracy was ensured by avoiding tendencies of omissions, repetitions and incomplete answers through re-visits, follow-ups, field cleaning of data and self-editing (corrections based on previous responses, or by comparing to practically observable situations). Pre-testing of instruments as discussed earlier, also facilitated quick detection of errors in the instruments for correction before the actual survey (Kumar, 1999; Twumasi, 2001).

Precision was met through accurate timing of activities and consistency of data with the defined theoretical, conceptual and analytical frameworks. Data triangulation was also practiced (Kane, 1995) by examining the influence of different times, past and present, on whatever was studied; examining the situation from different angles such as water issues from the point of view of the ordinary users, the Water Boards, the private sector TSP organizations and the service provider (GWCL/AVRL).

To ensure that data gathered is readily available for use, information from observations, interviews and discussions were recorded in field notebooks. Photocopies of textbooks reviewed

were made and stored in files (Bacho, 2001), data from the internet shall either be printed out or soft copies stored on pen drive and computer.

3.11 Challenges of the Study

Theoretical challenges

Since the study employed a set of theoretical and conceptual considerations, the application of these theories and concepts were not easy without careful planning. Thus theoretical and conceptual frameworks had to be designed to provide the foundation and structure for the study (Yin, 1993). This also called for the identification of suitable theories and conecepts and the skillful examination and designing the outline of the study through an analytical framework to adequately integrate the tenets of the adopted theories and concepts. The challenge was also managed by identifying the ambiguities in any adopted theory and the necessary modifications were introduced to make it suitable for this study, since critiques and the introduction of new knowledge in existing body of knowledge is an acceptable practice in social science research (Kane, 1995).

Methodological challenges

The intended sampling techniques and study design to be adopted need adequate professional research ideas to be able to handle, otherwise the accuracy and validity of the results could be affected. Lack of familiarity with the various zones of the study area and the existence and activities of the TSP Water Boards could lead to the selection of the wrong cluster. This was solved by a comprehensive reconnaissance survey (Kane, 1995). Also inadequate planning and timing for the various stages of the research such as proposal writing, data collection and analysis could create the problems of securing respondent cooperation or the inabllity to meet deadlines. Through the preparation of a work plan and carefully following it, the activities of the researcher were well controlled to minimize the problems (See Kumar, 1999).

Financial constraints

Since the execution of a research work of this nature involves logistical considerations such as acquisition of stationery (jotters, files, pencils, printing paper and so on), as well as travelling,

feeding, accommodation of research assistants, typing and printing expenses, one could anticipate heavy financial implications, and the failure to adequately fulfill these obligations could affect the quality of the output since some stages or aspects of the study migh be ignored or not well done. This problem was reduced by drawing a budget for the research in which all items of expenditure were identified, quantified and associated costs estimated and assigned in a comprehensive research budget statement (Kumar, 1999). Steps were then taken to identify various sources of financing the budget in order to avoid any inconveniences.

3.12 Modifications and Flexibilities Introduced

This section presents a description of what was to be done as expected in theory, and what was done and why it was done the way it was done (UDS-PGSG, 2008). It is an account of how and why the researcher departed from the original plan and the lessons learnt (Bonye, 2007).

3.12.1 Modifications made

It is customary for a researcher to consider the total number of people with a common characteristic of interest in a study area as the population, which is then down-staled to the sample size (Kish, 1967). However the phenomenon under investigation in this study related to the use of public standpipes, which was a household rather than an individual affair. Hence this study took the study population to be the total number of houses that use public standpipes in Dalun.

Also in data analysis, even though the study did not intend to use hypotheses, it became necessary to measure the strength of the relationship between variables (Kane, 1995). Hence statistical coefficients were employed to test these relationships. This facilitated a better comparative assessment of the models before and after the TSP intervention in pro-poor tariff management at Dalun.

Theoretically, the study did not only identify the gaps in the TSP model as implemented in Dalun, but also emerged with a modified model as an alternative, since research is a way of thinking and a problem solving process (Kumar, 1999).

For the rest of the study, predictions were made about possible problems that could arise from the execution of any methodological procedure, and advanced solutions adopted to mitigate each of them. Hence there was no much departure from the original plan.

3.12.2 Lessons learnt

Creativity is panacea for overcoming structural challenges in social science research but a well thought-out research process can minimize problems for better quality of data and reliability of findings.

CHAPTER 4: RESULTS AND DISCUSSIONS

4.0 Introduction

This chapter presents a critical examination of the research material in order to understand its parts and its relationship for the discovery of existing trends (Twumasi, 2001). It involves various attempts to answer the research questions by the separation of the research data into constituent parts that have been logically ordered, by following the analytical themes constructed from the analytical framework. Being cross-sectional in nature, cross-tabulation, descriptive and correlative statistical analysis with the aid of SPSS version 16 and Microsoft office excel have been used for the presentation of the quantitative data, and the analysis enriched with qualitative information from the various data collection tools applied.

Since the research instruments were designed for retrospective data (Kumar, 1999) the *before* and *after* study design was applied in the analysis for the assessment of the TSP by comparing the periods before and after the intervention with regards to each analytical variable. The findings have been presented under sub-themes derived from the analytical framework.

4.1 Socio-economic Background of Respondents

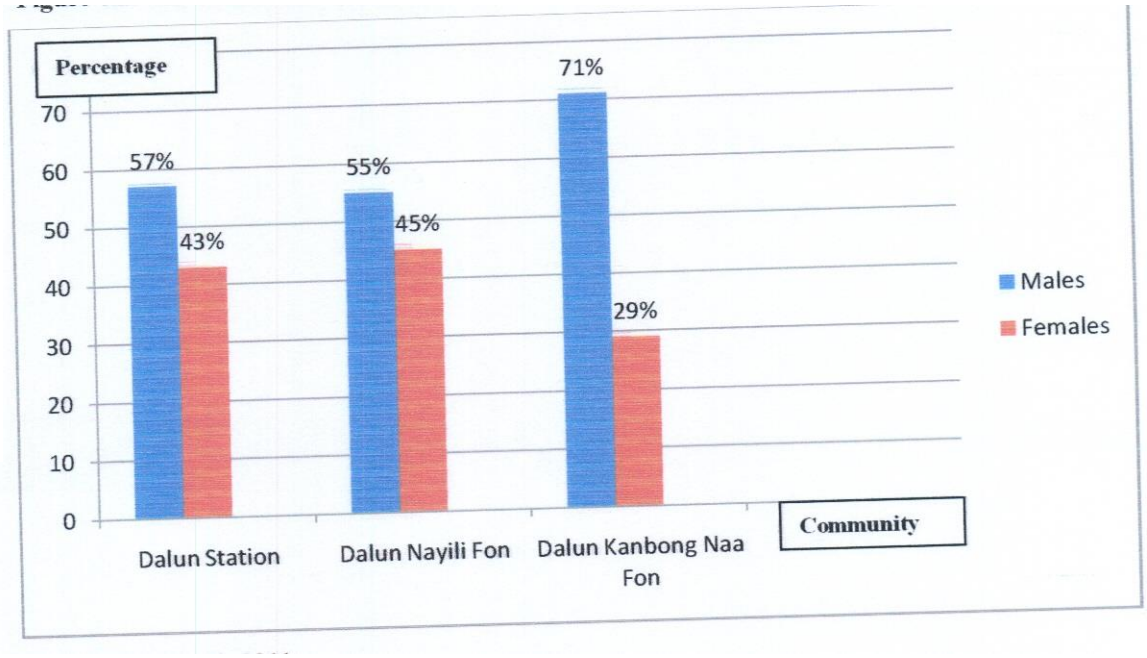
This section has examined the relevant socio-economic characteristics of the respondents that either justify the need for a pro-poor service delivery model or influence water use behavior (Munasinghe, 1992).

4.1.1 Sex distribution of respondents

The basis for the selection of respondents as sample elements for questionnaire administration was for one to be a household head. Though the Dalun community like any other ethnic community in Northern Ghana is patriarchal, some women from female headed households constituted a significant proportion of the sample. Figure 4.1 shows the sex distribution of the respondents over the three zones of Dalun studied. About 57% of the respondents at Dalun Station were males, while the females were 43%. Dalun Nayili Fon had 55% of males and 45% of females. At Dalun Kanbong Naa Fon, the gender gap was much wider as males formed 71 % while females were only 29%.

Generally males dominated in all 1he three zones and constituted 61 % of the sample population of 80, while females formed the remaining 39%. The gender composition is therefore not bad since the society is patriarchal. This is consistent with the Ministry of Local Government and Rural Development (MLGRD) report (2006), that the proportion of female household heads in the Northern Region of Ghana (14.1%) is higher than the national average (11%). Most of these female household heads either belong to the economically active age groups (15-64) and the sole bread winners of their households and could be divorced or never married, or come from *de facto* female headed households due to the out-migration of the male heads to the larger towns and cities of the country in search of waged employment (See Moser, 1993). Household heads were considered as the sample elements because they are responsible for productive roles including the payment for household utility services such as water (Moser, 1993; Apusigah, 2004).

Figure 4.1: Sex distribution of respondents



Source: This study, 2011

In the midst of poverty in a largely agrarian society characterized by low household incomes, much of the responsibilities for the payment for water have often been shifted onto women, who are the poorest segment of the society (Kendie, 1992). This contention about women in rural north Ghana has been proven in a later part of this chapter.

Using the Pearson's Correlation Coefficient (which measures the strength of relationship between nominal data) it was established that before the TSP intervention period in 2007, there was a positive correlation coefficient of 0.175 or 17.5% at a significant level of 0.120 between gender and willingness to pay (See Table 4.1). Though this was *insignificant* for a better conclusion to be drawn between gender and willingness to pay (since the significan level was above the cutoff point of 0.05), a positive relationship existed between gender and willingness to pay for water before the TSP period. About 43% of the males were not willing to pay anything for water, while 55% of women were also not willing to pay for water before the TSP period. This was due to factors such as poor service quality, including poor response to technical faults and water bills without services, which represent the R factor (present service quality) in the willingness to pay model (See Munasinghe, 1992).

After the TSP intervention however, there was an autonomous further drop in the correlation coefficient between gender and willingness to pay to 0.109 or about 11 % at a significant level of 0.335 which is also not adequate for an alternative hypothesis to be accepted, though the relationship remained positive. It became necessary to determine whether the role of the community in the TSP as a spurious or control variable improved upon the relationtip between gender and willingness to pay for water (See Haberman, 1978).

Table 4.1 shows that the role of the community through the activities of the Water Boards influenced the correlation between gender and willingness to pay for potable water by increasing the correlation coefficient from 11% (0.109) to 15.5% (0.155). Statistically, the significant level has remained higher than the cutoff point of 0.05, but there is evidence that the TSP has had a positive influence on the relationship between gender and willingness to pay, but a weak one. Specifically however, during the TSP period, the standard tariff rate for 18 liters of water was 2Gp, and the WTP of the various gender groups at this rate has been examined at a later stage of this chapter. The correlation coefficients are however indicative of the fact that more men were willing to pay than women before the TSP period *(but were the men actually paying?* See plate 4.1), and after the TSP the opposite was the case. This implies that the TSP intervention had more positive effects on women than men in terms of willingness to pay, due to improvement in service quality to the satisfaction of women.

Table 4.1 Partial Correlations between community role and willingness to pay by gender after the TSP period

Control Variables			Sex of respondent	Willing to pay for water after TSP
Community role in TSP	Sex of respondent	Correlation	1.000	.155
		Significance (2-tailed)	.	.173
		Df	0	77
	Willing to pay for water after TSP	Correlation	.155	1.000
		Significance (2-tailed)	.173	.
		Df	77	0

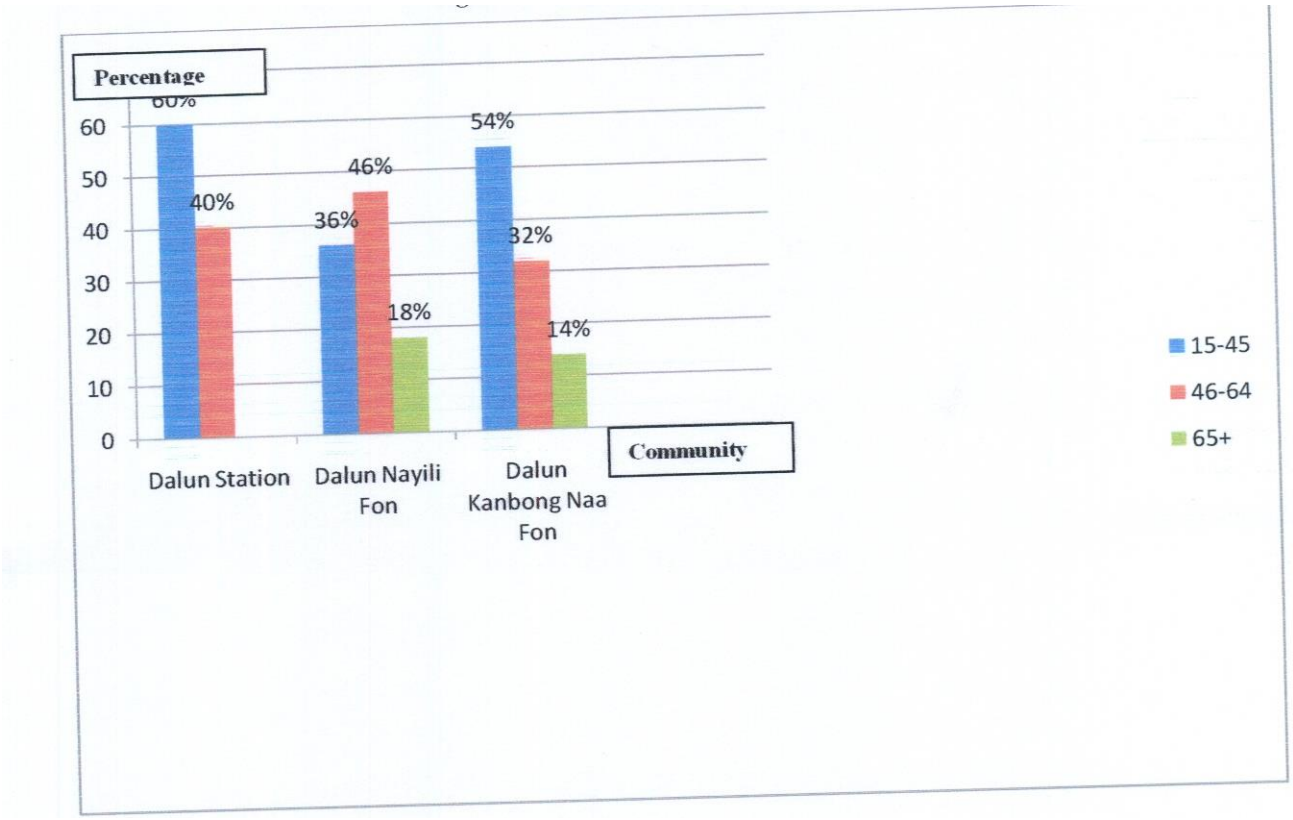
Source: This study, 2011.

This is because women use water most and so are in a better position to match service quality to tariff rates. In the analysis of the major analytical themes at a later part of this thesis, we shall see how this high willingness to pay by the poorer segment of the society (women) determined the success or otherwise of the TSP pro-poor tariff collection process.

4.1.2 Age disbibution of respondents

Figure 4.2 presents the age distribution of the respondents. Since the respondents w e made up of household heads, the minimum age of being economically active (15) was opted. The ranges 15-45, 46-64 and 65+ was to facilitate the classification of the population in the youth, middle and aged (Osei, 1983). Figure 4.2 shows that generally, a greater proportion of the population of the area is in the lower age cohort, which is characteristic of a rapidly growing population (Getis, Getis and Fellmann, 2006). With the total of eighty (80 household respondents, the age group 15-45 constituted 51.25%, the group 46-64 was 38.75% rd the aged above 65 formed 10%.

Figure 4.2: Age distribution of respondents



Source: This study, 2011

Dalun station with the greatest representation of 30 respondents registered no element in the group 65+. Dalun Nayili Fon, where the Dalun Naa's (Chief of Dalun) palace is located, with the least respondent representation of 22 had a greater proportion of its population belonging to the middle and aged groups. In rural areas of developing countries, a greater number of this age group has no formal education. This study determined whether it is the young or the aged that were more likely to accept the innovations introduced by the TSP through participation in the associated comnnmity roles. Table 4.2 gives an impression of the possible involvement of the various age groups in the roles of the community in the TSP by percentages. It is obvious that participation diminishes as we move from the youthful and the middle-aged towards the aged.

The use of statistical correlation measures, specifically the 'Gamma' (which measure the strength of relationship between ordinal by ordinal data) was to test the hypothesis that community participation in the TSP decreases with age (See Table 4.3). Table 4.3 shows that the *Gama* produced an approximate significance of 0.395 with a *Gama* negative coefficient of-

0.131 or -13.1 %. Though not significant by virtue of the excess of 0.395 significant level over the cutoff point of 0.05, the data indicates a negative or inverse relationship between age and community roles in the TSP (See Nie *et al*, 1975; World Bank, 1992).

Table 4.2: Age of respondent and community role in the TSP

	Community role in the TSP					Total	
Age of respondent	Management of the water system	Maintenance of the water system	Collection/payment of water bills	Reporting technical faults to GWCL/AVRL	Providing communal labour	Absolute Number	Percent
15 – 45	42 %	55%	64%	44%	50%	41	51.25
46 - 64	45%	45%	28%	33%	50%	31	38.75
65+	13%	0%	8%	23%	0%	8	10
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**80**	**100**

Source: This study, 2011

Table 4.3: Relationship between age and community role in the TSP- Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Ordinal by Ordinal	Gamma	-.131	.154	-.851	.395
N of Valid Cases		80			

Source: This study, 2011

Thus, the significance of the age composition of the area is that, in community participation in the TSP, the allocation of responsibilities is based on age. The Chief or the most elderly member is usually the Chairman, while the responsibilities of under-going training, maintaining the water system and tariff collection among others rest with the younger members (as case is in Dalun).

4.1.3 Marital status of respondents

Table 4.4 shows the distribution of the marital status of repondents in the three zones. There are greater representations of the married respondents because the household survey was meant for 'household heads'.

Table 4.4: Marital status of respondents

Community	Marital status			Total	
	Married	Single	Widow/widower	Number	Percent
Dalun Station	25	4	1	30	37.5
Dalun Nayili Fon	18	2	2	22	27.5
Dalun Kanbong Naa Fon	20	5	3	28	35
Total	**63=79%**	**11=14%**	**6=7%**	**80**	**100**

Source: This study, 2011

Those who were single but were household heads were mostly single parents through divorce. The married people constituted about 79%; single 14% and widows 7% of the respondents. Comparatively the community has a higher proportion of married people in the Northern Region given that of the Tamale Metropolis of 54% (MLGRD, 2006). Polygamy is common in Dalun as a Muslim community and accounts for larger household sizes with an average of 7, which is higher than the national average of 4 and closer but slightly below the regional average of 7.4 (Ghana Statistical Service (GSS), 2008). Generally however, larger households are associated with more affiuent household heads (MLGRD, 2006; GSS, 2008).

The high level of marriages and increassing household sizes is generating *ineffective demand* as there is gross mismatch between increasing household needs and lower incomes mainly from farming activities, thus negatively affecting the ability to pay for water and other basic services on sustainable basis (Kendie, 1992; Seini, 2002).

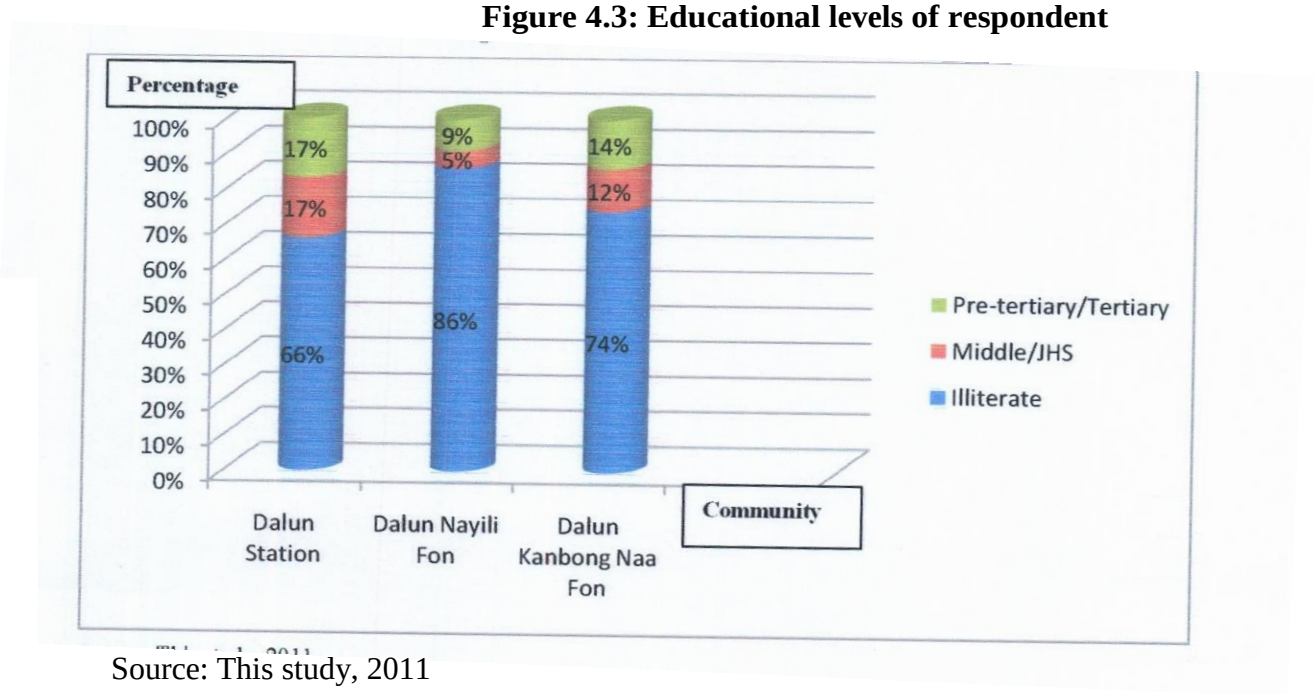
4.1.4 Educational background of respondents

Figure 4.3 shows the educational distribution of the respondents in the three zones of Dalun. It indicates that illiteracy is generally high in all the three clusters of Dalun, and of the sample population of eighty (80), about 75% are illiterates which is above the national average of 31% (GSS, 2008). 11 % have Middle/ Junior High School education and 14% have senior High School/Technical and Tertiary level qualifications which is closer to the national average of 13.6% (GSS, 2008). This trend is characteristic of rural areas of developing countries, where there is generally low expenditure on education or human capital as a result of low incomes {Todaro and Smith, 2009).

Based on a household income stratification criterion presented at a later stage, further computations revealed that while 52.5% of the 80 respondents fall in the low income stratum, the proportion of illiterates in the low income stratum (52.54%) was slightly higher than that of the educated (52.38). This is a weaker confirmation of the view of Todaro and Smith (2009), that education is associated with higher income levels. The higher proportions of the low income groups had an overall effect on willingness to pay and the effectiveness of the water tariff collection methods before the TSP.

Thus, the question worth investigating is: Could there be perfection and sustainability in the payment for water in a pro-poor service delivery model without any attempt to address the root causes of poverty itself? In response to this, Todaro and Smith (2009) argue that there is the need to employ multipronged strategies to address the problems of poverty, including not only educational or human capital development but also the creation of employment oppotunities for all. In a later part of this work, the limitations of the TSP in response to the question have been revealed, and an alternative multi-factorial model proposed to cover the gaps.

Figure 4.3: Educational levels of respondent



Source: This study, 2011

4.1.5 Occupational distribution of respondents

Like many other rural areas of Ghana, the occupational distribution of the residents of the three zones of Dalun exhibit a similar pattern and so have been collectively presented in Figure 4.4. It shows that of the eighty (80) household respondents, 52%, 19°/o, 15%, 6% and 8% were farmers, house wives, traders, formal sector employees and others (pito brewers, hair dressers and tailors among others) respectively.

Though the involvement of the sample population in agriculture is far below the figure of 85% for the Dalun town as a whole (POI, 2008), the 52% for this study compares well to the national average engagement in the sector which is 55.8% (GSS, 2008), and the picture still remains that agriculture is the major employer of the population.The contrast is, however, due to the fact that the three sampled clusters are among the largest zones of the town with Dalun Station being the Central Business District, and following a *demand driven approach,* the public standpipes are strategically located to meet the needs of densely populated areas of the zones (Bacho, 2001).

Characteristically most residents of such areas take advantage of the population density to engage themselves in other non-farm occupations, and being service centers they tend to attract formal sector employees as residents.

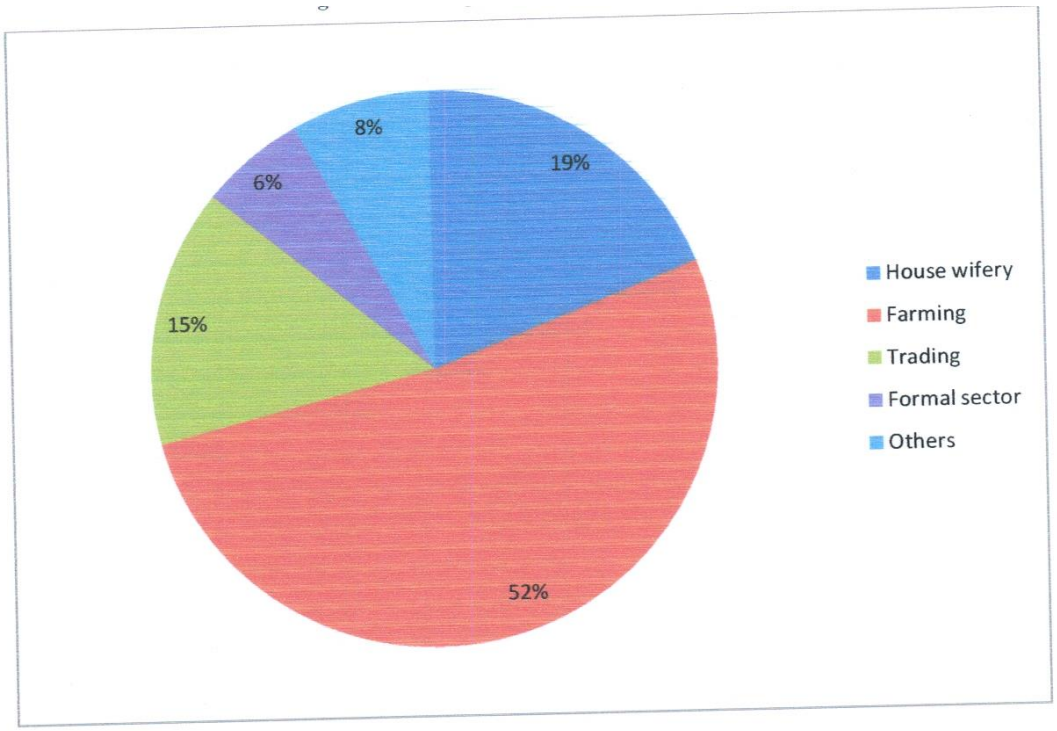
The greater representation of housewifery as an occupation (19%) in Figure 4.4 is indicative that a majority of the married women in the area are not engaged in deliberate income generating activities apart from their traditional reproductive roles for reasons expressed later in this chapter, but usually considered as an occupation as some scholars argue that there is nohing like the unemployed housewife, because their activities are contributive to the possibilities and successes of the productive roles of the working class in the household (See Moser, 1993). The dominance of farming (52%) however still accounts for the low income nature of the people as explained earlier. For instance, the ten regions of Ghana have been stratified on the basis of poverty, and the three northern regions are the poorest (GPRS, 2002-2004).

Though agriculture employs the greatest proportion of the labour force of Ghana the type of products and the scale of production matter; the practice of subsistent farming in the production of food crops such as maize, millet and cowpeas places farmers in the north second to their counterparts in the southern part who cultivate large scale commercial crops such as cocoa, coffee and pineapple (K wamena and Benneh, 1988).

The study established that there was a negative correlation coefficient of -0.072 or 7.2% at significant level of 0.525 between occupation and household willingness to pay for water before the TSP period. The negative coefficient suggests an inverse relationship between occupation and willingness to pay (as one increases the other decreases), while it's excess over the 0.05 cutoff point makes it a weaker one for any reliable conclusion about the relationship (Nie *et al*, 1975; and Korey, 2010). To be more specific, it means that as water tariff increases the willingness to pay among the various occupational groups reduces. Table 4.4 also presents the correlation between the same variables after the TSP.

Table 4.4 reveals a better significant level of 0.022 which provides a basis for the Pearson Correlation Coefficient of -0.257 or 25. 7% to cause the acceptance of an alternative hypothesiss that there is a relationship between occupation and willingness to pay for water. The coefficient of -0.257 is however relatively weak compared to the perfect coefficient of -1 or + 1 j(Haberman, 1978). The relationship is still negative and implies an inverse relationship betwee and willingness to pay among all the occupational groups.

Figure 4A: Occupational distribution of respondents



Source: This study, 2011

Table 4.4: Occupation and willingness to pay correlation

		Occupation	Willing to pay for water after the TSP period
Occupation	Pearson Correlation	1	-.257*
	Sig. (2-tailed)		.022
	N	80	80
Willing to pay for water in 2007	Pearson Correlation	-.257*	1
	Sig. (2-tailed)	.022	
	N	80	80

*correlation is significant at the 0.05 level (2-tailed)

This is however, consistent with the inverse relationship between price and demand by the law of demand (see Amanfo, 1990). But as a life wire commodity, since the actual quantity of water consumed was not decreasing significantly with increasing tariffs, it became necessary to examine the effects of a control variable such as the influence of the roles of the Water Boards under the TSP model on the relationship between other variables and willingness to pay, and the associated effects on tariff collection.

4.1.6 Household income levels of respondents and willingness to pay

Table 4.5 presents the stratified monthly household incomes of the respondents. It was considered necessary to group the household monthly incomes of the 80 respondents by ranking them as *low*, *medium* and *high*, based on the national average monthly income of GH¢101.42 (GSS, 2008). Using a class interval of 44, incomes with upper class limits below half of the national average (e.g. 49) were ranked *Low*, those with upper class limits above half but below the national average (94) were ranked *Medium*, and those with upper class limits up to, and above the national average (139) were ranked *High* (See Sirkin, 1999).

Thus, the low, medium and high income groups formed 51.25%, 40% and 8.75% respectively of the total sample· size of 80. This is a justification for the initiation of a *pro-poor* water service delivery model in the area, as over 50% could contextually be described as poor.

Furthermore, taking the total of household incomes of the respondents and dividing by the sample size, the average household monthly income of the area was estimated as GH¢55.2, which is very low compared to the national average of GH¢ 101.42. Given the average household size of 7, demand for basic needs including potable water is high, and contributes to a relatively higher household expenditure.

The study has examined the correlation between household income and other economic activities (Y) and the willingness to pay for water (D) before and after the TSP intervention in the Dalun community. Attention was focused on income in this section.

It is worth mentioning that all the three zones of Dalun sampled for the study exhibited the same pattern of the relationship between income and willingness to pay. Table 4.6 generally illustrates the relationship collectively. Also, before the TSP period tariff rates were based on Increasing Block Tariff (IBT), which catered for a lifeline use of water by the very poor who could not pay for water at all. After the TSP period there was the introduction of a bargaining principle for pro-poor tariff rate setting, in which an initial bid of 2Gp as tariff rate for 18 liters of water was set for bargaining, and later adopted.

In Table 4.6, 36%, 24%, and 40% of those in the low income stratum opted for 1Gp or less, 2Gp and not at all (no payment) respectively as tariff rate for 18 liters of water before the TSP period. Of the medium income group 25%, 21 % and 54% wanted to pay 1 Gp or less, 2Gp and not at all respectively for the same quantity. Among the high income group 29%, 14% and 57% were willing to pay 1Gp or less, 2Gp and not at all respectively. No respondent wanted to pay above 2Gp before the TSP period. Of all the respondents, 47 .5%, 31.25% and 21.2 % were not willing to pay at all, preferred 1 Gp or less and 2Gp respectively, and no respondent wanted to pay more than *2Gp.*

The modal tariff rate before the TSP intervention was therefore *not at all,* followed by 1Gp or less. Table 4.6 also shows that the low income group are more willing to pay (WTP) at higher tariff rates than the rich given a participatory pricing policy, but can exhibit social altruism and disorganisational effects if tariff rates exceed their ability to pay.

Table 4.6: Income strata of respondents and Willing to pay for water before the TSP period

Income stratum of respondent	Price of water and WTP before the TSP (tariff/18 liters)							
	1Gp or less		2Gp		More than 2Gp		Not at all	
	(f)	(%)	(f)	(%)	(f)	(%)	(f)	(%)
Low-GHC 5-49	15	36	10	24	0	0	17	40
Medium-GHC 50-99	6	25	5	21	0	0	13	54
High-GHC 95-135+	4	29	2	14	0	0	8	57
Total	**25**	**100**	**17**	**100**	**0**	**0**	**38**	**100**

Source: This study, 2011

Table 4. 7 proves this inverse relationship between income and WTP by cross-tabulation results before the TSP by symmetric measures, using the Kendall's tau-c and the Gama co-efficients for the three sampled zones.

The data in Table 4.7 indicate that though the statistical significances for the measurement of associations between household income and willingness to pay before the TSP period for the three selected zones are larger than the cutoff point of 0.05, the zone with the most approximate significance is Dalun Kanbong Naa Fon with 0.362 for both the Kendall's tau-c and the Gama respectively, followed by Dalun Station with 0.415 and Dalun Nayili Fon as the least which is largely insignificant at 0.626.

These give the correlation coefficients for the Kendall and Gama of 0.130 (13%) and 0.283 (28%) respectively for Dalun Kanbong Naa Fon; 0.127 (about 13%) and 0.218 (about 22%) for Dalun Station and -0.074 (7.4%) and -0.207 (about 21%) for Dalun Nayili Fon respectively. The coefficients thus favour Dalun kanbong Naa Fon, Dalun Station and Dalun Nayili Fon respectively in order of importance.

All except Dalun Nayili Fon however have positive coefficients, indicating a positive relationship between household income and WTP before the TSP. This implies thdt WTP in all

the three zones before the TSP was generally low since the coefficients are far from te perfect level of +1 or -1, with Dalun Nayili Fon having the lowest and inverse relationsh p between household income and WTP. This period was therefore characterized by high water ill arrears as we shall see later in this thesis.

Table 4.7: Relationship between income and willingness to pay for water by zones before the TSP-Symmetric Measure

Community		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig
Dalun Station	Ordinal by Ordinal Kendall's tau-c	0.127	0.155	0.816	0.415
	Gamma	0.218	0.265	0.816	0.415
	N of Valid Cases	30			
Dalun Nayili Fon	Ordinal by Ordinal Kendall's tau-c	-0.074	0.153	-0.488	0.625
	Gamma	-0.207	0.403	-0.488	0.626
	N of Valid Cases	22			
Dalun Kanbong Naa Fon	Ordinal by Ordinal Kendall's tau-c	0.130	0.143	0.912	0.362
	Gamma	0.283	0.287	0.912	0.362
	N of Valid Cases	28			

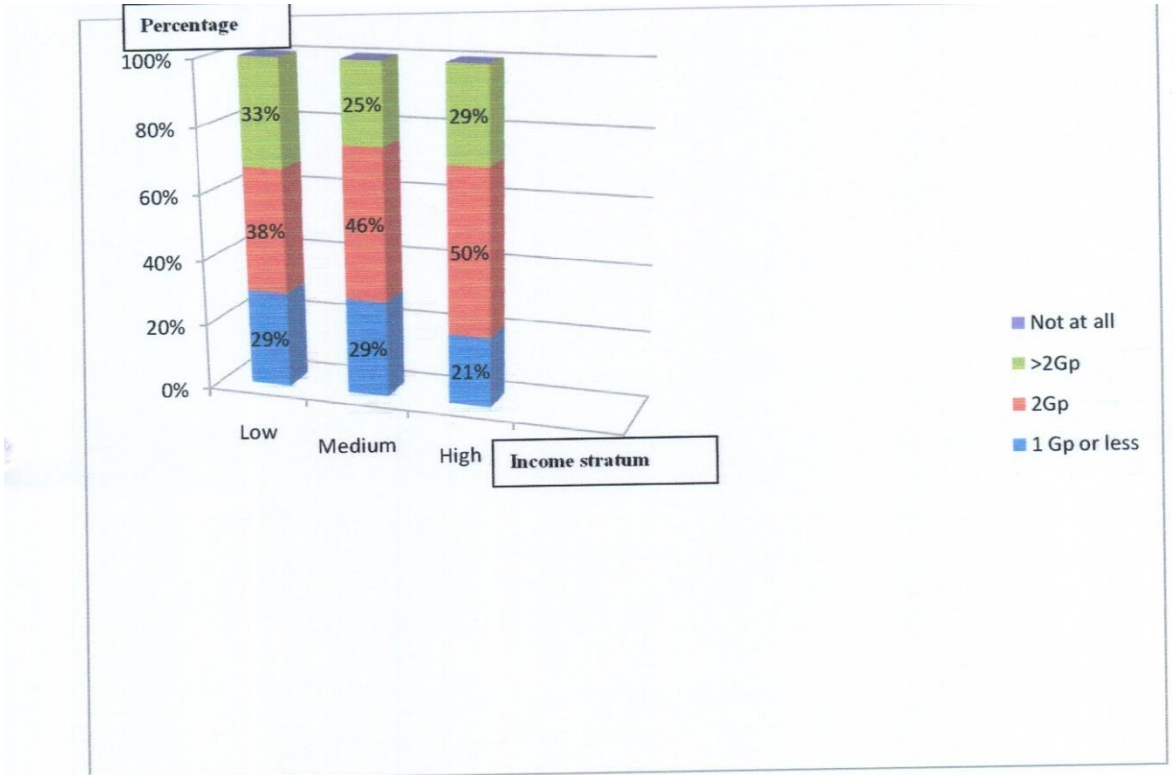
Source: this study, 2011

The picture after the TSP period was quite different. Figure 4.5 is a presentation of the tariffs households wished to pay for 18 liters of water after the TSP intervention. It shows that all respondents were willing to pay for water after the TSP intervention; hence the frequency for 'not at all' was zero (0) among all the income groups, while it had the highest response rate before the TSP period (Table 4.6). Of the low income group, 29%, 38% and 33% respondents were willing to pay 2Gp, more than 2Gp and 1 Gp respectively for 18 liters of water Within the medium income stratum 29%, 46% and 25% were willing to pay for the same tariff rates respectively for the same quantity. The votes by the high income group for the rates were also 21 %, 50% and 29%.

It is obvious that with the introduction of some improved conditions in water services such as participation or service quality' even the poor will be willing to pay higher prices for water (Whittington, 1998). The findings also showed that the modal tariff rate preferable to respondents after the TSP was 2Gp with a rate of 42% responses out of the total of 80. A

remarkable proportion of 300% of the responses also favoured a tariff rate of more than 2Gp, while l Gp or less ranked lower this time with 28% responses. It is apparent that some factors such as improvement in service quality, the adoption of a pro-poor pricing policy and the incorporation of community participation in water tariff management were contingent on household willingess to pay for water after the TSP intervention (see Kendie, 1992; Munasingbe, 1992; Alexander, 1993; Whittington, 1998). This has been proven empirically at a more progressive stage of the analysis, but Table 4.8 establishes the strength of the relationship between income levels of respondents and willingness to pay for water after the TSP in in the three zones of Dalun.

Figure 4.5: Income strata of nspondents and tarifl's they weft wilting to pay tor water after the TSP intervention



Source: This study. 20l l

Table 4.8 shows that Dalun Nayili Fon had a perfect approximate significance of 1 for both the Kendall's tau-c and the Gama, and the 0.000 as correlation coefficient for the two statistical measures means there is perfectly no relationship between income and willingness to pay for water at Dalun Nayili Fon after the TSP intervention. Dalun Station had the best approximate significance of 0.281 but falls outside the cutoff of 0.05.

The negative coefficients of -0.170 and -0.273 for the Kendall and Gama in Table 4.8 mean that there is a weak inverse relationship between income levels of household heads and willingness to pay for water. In other words, low income household heads were rather willing to pay for water at Dalun station than the high income groups. Dalun Kanbong Naa Fon had a poor significance of 0. 772 and so does not permit us to accept a hypothesis that there is a relationship between household income and willingness to pay for water. It however had positiv correlation coefficients of 0.046 and 0.094 (4.6% and 9.4%) for the Kendall and Gama respectively, which are very weak for statistical relevance.

One could derive from the above that there was very little success of the TSP in promoting willingness to pay among the various income groups, and this has implications for the performance of the pro-poor water tariff collection process. The low but positive coefficients for the relationship means that household income as a component of economic activit (Y) in the WTP function could influence household willingness to pay for water, if the TSP involved improvement in income generating activities as well (See Munasinghe, 1992 and Smith, 2006).

Table 4.8: Relationship between income and willingness to pay for water after the TSP- Symmetric Measures

Community		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig
Dalun Station	Ordinal by Ordinal Kendall's tau-c	-0.170	0.158	-1.079	0.281
	Gamma	-0.273	0.249	-1.079	0.281
	N of Valid Cases	30			
Dalun Nayili Fon	Ordinal by Ordinal Kendall's tau-c	0.000	0.186	0.000	1.000
	Gamma	0.000	0.366	0.000	1.000
	N of Valid Cases	22			
Dalun Kanbong Naa Fon	Ordinal by Ordinal Kendall's tau-c	0.046	0.158	0.290	0.772
	Gamma	0.094	0.320	0.290	0.772
	N of Valid Cases	28			

The rest of this thesis has looked at how this socio-economic background of the people manifested in die performance of die participatory model.

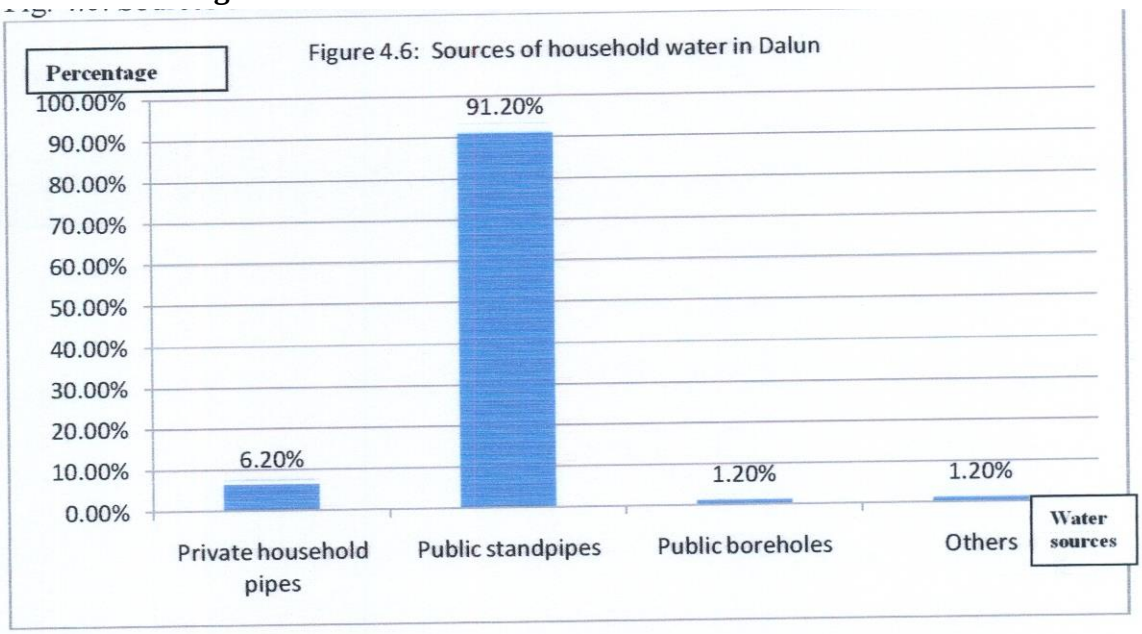
4.2 The Situation of Potable Water Supply in Dalun

4.2.1 Sources of water available to households

The study revealed diat there are several sources of water available in Dalun, including dams and rivers, wells, boreholes, public standpipes, private household pipe connections and water vendors. Figure 4.06 shows the common sources of potable water identified by the respondents. It indicates that the most popular source of potable water to households is from public standpipes with 91.2% responses, followed by private household pipes with 6.2%, both of which are provided by the GWCL/ AVRL. The dominance of public standpipes reflects background of the people, as they can share cost of maintenance and water Munasinghe, 1992; TWOP Report, 2007/2008; Water Aid Malawi, 2008). Boreholes and the other sources as given above had 1.2% response rates each. It is apparent that this heavy dependence of the poor on public water supply means that any privatization policy aimed at profit maximization from water could adversely affect the social welfare of the people, and could bring about social disorganization effects.

Fig. 4.6: Sources of household water inDalun

Figure 4.6: Sources of household water in Dalun



Source: This study, 2011

It was in line with this that Mr. Gerard Mestrallet, President-Director of the French Water Company Suez, said that:

> *"We believe that the privatization of water infrastructure in developing countries is not necessary. The use of the term privatization by some authors in their models while referring to situations where the public sector remains the final owner of the infrastructure constitutes an abuse of language" (Mestrallet, 2001; see also Labre, 2004; as cited in Castro, 2005: 758).*

Accordingly, not only is Ghana a developing country, but the practice of the Public Ownership and Private Operation (POPO) of water services exemplifies the picture expressed above. The country is exposed to the challenges of providing quality water to the poor majority in rural and peri-urban settlements at higher production cost but low revenue, due to the adoption of pricing policies that favour the poor such as IBT. However, some form of Marginal Cost Pricing becomes necessary to enable public water supply corporations/companies to meet a least, their operational costs (See Amanfo, 1990; Munasinghe, 1992).

Additionally, the wide range of sources of water could influence the people's water use behaviour in response to increasing water tariffs as a component of the Z factor (See Munasinghe, 1992), but at the risk of their health as they resort to unhygienic sources (GWSC, 1969). Study results show that the relationship between available sources of water and willingness to pay before the TSP had a contingency coefficient of 0.312 (31%) at 0.370 significant level. After the TSP however, this association dropped to 27 .9% at a significant level of 0.562. This was due to the improvement in service quality and community participation (R * and Z factors) in public water services, such that there was a reduction in competition between patronage to the public standpipes and other sources of water (Munasinghe, 1992; Korey, 2010). A later part of this study examined how the TSP tried to achieve the goal of meeting the operational cost through community participation in the tariff determination collection processes.

4.2.2 The working of the water system

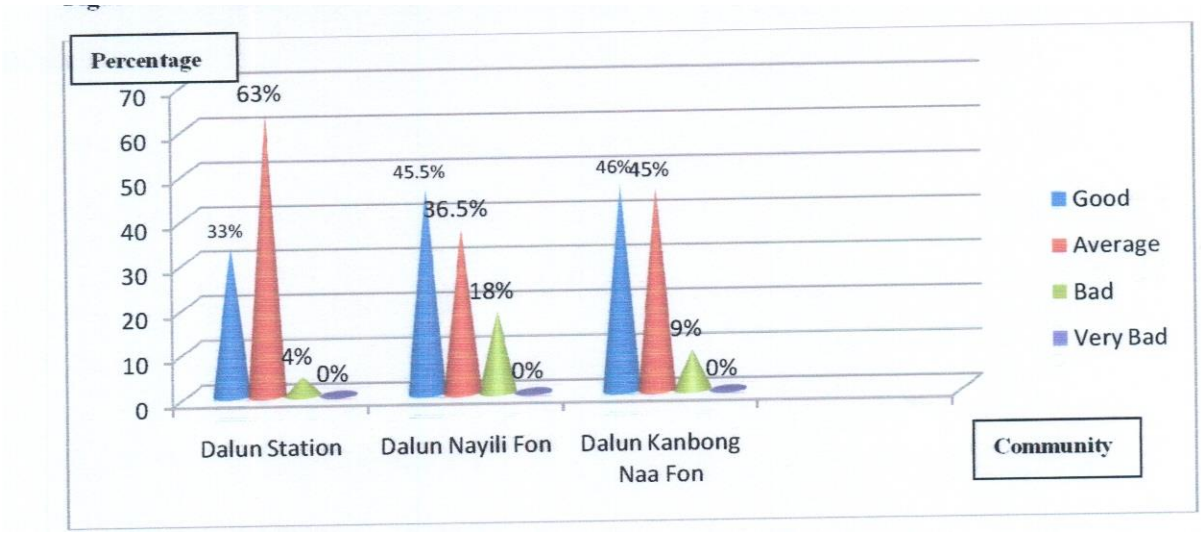
Figures 4.7 and 4.8 give impressions of respondents on the working conditions of the water system before and after the TSP intervention respectively in the three zones. Figure 4.7 illustrates that before the TSP intervention, the condition of the water supply system was generally good.

Cumulatively, of the eighty (80) respondents, 46% said it was good and another 45% claimed it was average, while only 9% were not satisfied with the performance of the water systeijn. None, however, considered the situation to be *very bad.*

The modal response for the average condition, as well as some level of dissatisfaction with the water system emanate from the reason that before the TSP intervention, there was a weak relationship between the Community Committee and the GWCL/ AVRL. There was therefore poor reporting and response to cases of leakages and technical break-downs due to the old and the rusty nature of system components, and thus led to an increase in inconveniences suffered, which is the *QC* factor in the Net Benefit (NB) function. (See Munasinghe, 1992; Nkrumah, 2004; TWOP Report, 2007/2008).

Also, the huge sums of unpaid water bills sometimes resulted into the termination of services or affected the motivation of the service providers to attend to reported faults. The flow of water was, however, regular to serviceable public standpipes since the community is along the main intake valve that serves the whole of the Tamale Metropolitan service area. There was thus, an influence on water use behaviour resulting from the notion of the source of water as the community's environmental resource (See Sirkin, 1999; Twumasi, 2001). This as been discussed in more detail in the latter part of this work.

Figure 4. 7: Condition of the water system before the TSP intervention in Dalun

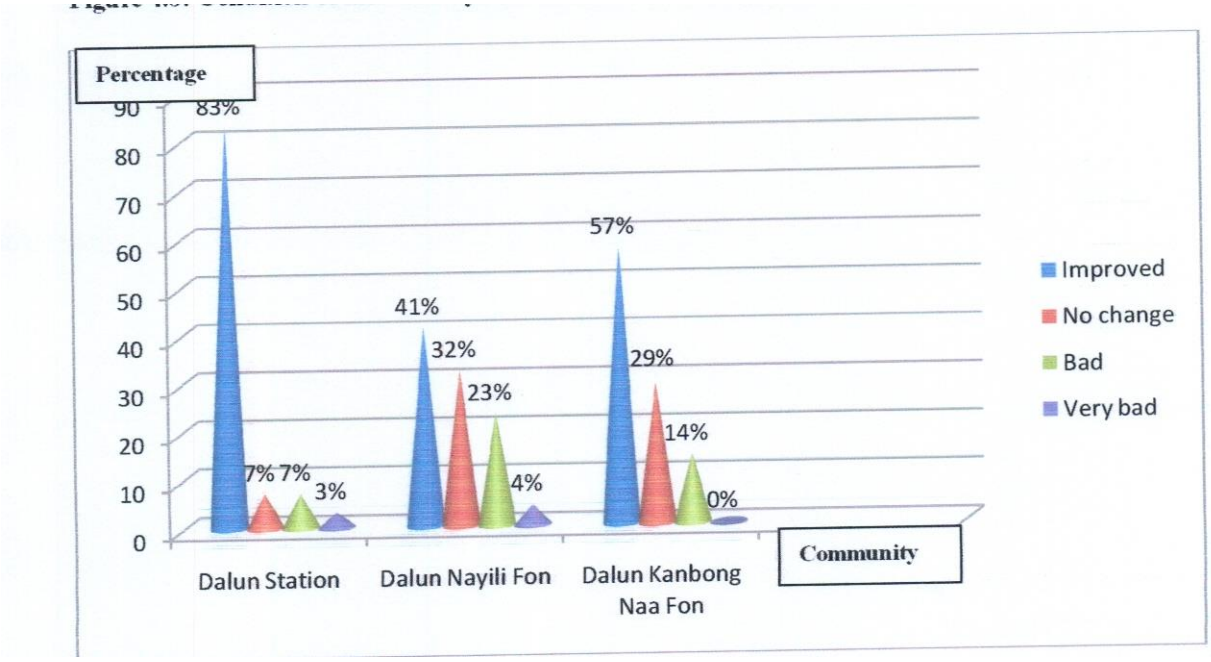


Source: This study, 2011

The statistical results indicated that there was a weak but positive relationship between service quality (R) and willingness to pay (D) before the TSP intervention. Both the Kendall's tau-c and the Gama produced an approximate significance of 0.504 and correlation coefficients of 0.057 (5.1%) and 0.103 (10.3%). Though this does not permit any genuine statistical conclusi n about the relationship between R and D, it does show that a positive relationship existed be the two factors, in other words as one worsened the other also worsened, and as one impn ved the other also improved.

Figure 4.8 presents the respondents' views on the condition of the water system after the intervention. Between 2006 and the early part of 2007, the TWOP was being implemented and was actually completed before the close of 2007 by Bi water Ltd. This led to an improvement in the condition of the water system because, it led to the introduction of pressure reducing valves to solve the problem of leakages due to high pressure on delivery and service pipelines. By the commencement of the TSP intervention, there was a great improvement in the water system, which accounted for a higher mean response rate of 62% for improved water services in the three study zones.

Figure 4.8: Condition of the water system after the TSP intervention in Dalun



Source: This study, 2011

A significant proportion of the respondents (21%) however observed no change in the condition of the water system after the TSP period. This was applicable to consumers whose setvices from public standpipes were uninterrupted before and after the TSP intervention. Though there was improvement in water services, the TSP period recorded cases of *bad* and *very bad* observed conditions as indicated in Figure 4.8. The reasons for the *bad* and *very bad* responses were the rationing of water as an aspect of the new Water Board operations, and increased pressure for the payment of water bills in view of the high investment cost for the rehabilitation of the water system, rather than service quality. Again more advanced statistical computations confirm that, the relationship between the expected service quality (R *) and willingness to pay improved after the TSP period as the significance became 0.261 and the correlation coefficients changed to 0.105 (10.5%) and 0.193 (19.3%) for the Kendall's tau-c and Gama respectively. The approximate significance still did not satisfy the requirement for acceptance, but improved over that before the TSP. (See Sirkin, 1999).

The TSP period was also characterized by the emphasis on metered water. This meant that water bills increased with increasing consumption levels. However, apart from the adoption of a pro-poor tariff determination approach as discussed at a later stage, there was rationing of water as a poor consumer protection strategy (against high bills), and also to reduce non-revenue or unaccounted-for-water. (See Nkrumah, 2004). Accordingly, there was 64% response rate for the adequate supply of water before the TSP period, but this later dropped to 59% within or after the TSP period.

4.3 Locality Development by Information Giving through the Review of Earlier Water Delivery Models before the TSP

This section begins the analysis of the first analytical theme by the presentation of findings that answer the first specific research question or measure the first objective. It is based on pure retrospective data resulting from descriptive/explanatory research applications, because the issues examined here happened in the past. (See Kane, 1995; Kumar, 1999; Twumasi, 2001).

As a precondition for the assessment of the TSP in the Dalun community, it was necessary to obtain information from the residents about earlier models of water delivery services the experienced, with emphasis on the role of the residents as information givers rather than as

participants of a development intervention. (See Rothman, 1968). This analytical theme, as expressed in the Arnstein's Ladder (Arnstein, 1969), reflected the conditions that paved the way for the TSP interventionists to identify the need to *educate* and *cure* the beneficiaries of the intervention. Table 4.9 is a presentation of respondents' retrospective view of earlier water delivery models they have ever experienced.

Table 4.9 Earlier models of water delivery services in Dalun before the TSP

Community	Earlier Models				Total	
	Public ownership and operation (POO)	Public ownership and private operation (POPO)	Private sector operation (PSP)	Public-private partnership (PPP)	Number	Percent
Dalun Station	23	3	1	3	30	37.5
Dalun Nayili Fon	19	1	0	2	22	27.5
Dalun Kanbong Naa Fon	6	10	4	8	28	35
Percentage	**48=60%**	**14=17.5%**	**5=6.25%**	**13=16.25%**	**80**	**100**

Table 4.9 shows that Public Ownership and Operation (POO) is the most popularly known model in all the three zones with a response rate of 60%. The other models associated with the private sector (POPO, PSP, and PPP) together were recognised by the remaining 0% of the respondents. This pattern of awareness of the service delivery models had an effect on the people's willingness to pay for water before the TSP period. In relation to Table 4.061 about 65% of the respondents familier with the POO voted for no payment for public water *(Not at all)* before the TSP period, while only 22% of those familiar with private sector related models expressed this view.

Table 4.10 is a statistical expression of the strength of the relationship between water service models and willingess to pay. The approximate significance of 0.003 in Table 4.10 falls within the acceptable significance level of $p<0.05$ (Nie *et al*, 1975), and so paves the way for the

acceptance of an alternative hypothesis (Hl) that a relationship exists between water delivery model and willingness to pay. The contingency coefficient 0.476 (about 48%) in Table 4.10 shows the strength of the relationship.

Table 4.10: relationship between willingness to pay and service delivery model in Dalun -Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Contingency Coefficient	.476	.003
N of Valid Cases		80	

Source: This study, 2011

The case after the TSP has been discussed at a later section. This information from the respondents implies that the effectiveness of the water tariff collection process before the TSP period was influenced by the type of water delivery model in use which was related to the willingness to pay by the water users.

The POO was in operation under the former Ghana Water and Sewerage Corporation (GWSC) (now GWCL), and the persistence of the GWCL still makes the least informed local people to think that water delivery services are still total state responsibility, for which reason they do not see the need to pay as the case was under the GWSC, during which period the supply of public water was virtually free. (see TWOP Report, 2007-2008).

The activities of Private Sector Operators in the water sector in the community are more informal and are mainly associated with private water vendors (especially water tanker services), hence the low response rate for this model. However, the strong debates over the privatizatibn of water at the Kokrobite conference in 1991 and the subsequent privatization of the GWSC in 1996 (Bacho, 2001; Nkrumah, 2004; DERS, 2010), brought to the awareness of most Ghanaians that potable water was no longer a free public utility service. Hence some of the respondents expressed this knowledge as they recognized the POPO and the PPP. The two models are however inseparable because, POPO is just a form of PPP in which the public sector owns the infrastructure for water delivery services or investment capital, while the private sector is

contracted to take over the operations for the purpose of efficiency under a managemtt contract (Castro, 2005). Those who understand this relationship know that there have been changes from GWSC (POO), to GWCL (PPP) and then to GWCUA VRL (POPO), which is the present model in use. Against this background, it became necessary to determine whether there were other variables such as community participation, and how they could control this model/WTP relationship.

4.3.1 Earlier Forms of Community Leadership Structures as Initial Sources of Tokenism through Consultation and Placation for Locality Development.

The assessment of the TSP model continued from the information giving stage to explore avenues for tokenism, through consultation and placation for locality development (Rothman, 1968; Arnstein, 1969) in terms of intervention in water services delivery. Retrospectively, respondents were asked whether there were any community-based civil society orgnizations in the community before the TSP initial period of 2007. Table 4.11 is a presentation of the responses to this question.

Table 4.11: Awareness of civil society representation in water services before the TSP

Community	Indication of awareness		Total	
	Yes	No	Frequency	Percent
Dalun Station	18	12	30	37.5
Dalun Nayili Fon	13	9	22	27.5
Dalun Kanbong Naa Fon	25	3	28	35
Total	**56**	**24**	**80**	**100**

Source: This study, 2011

Table 4.11 shows of the 80 respondents, 70% were aware of the activities of community-based civil society groups in potable water services, while the remaining 30% never knew about any form of community representation in water services before the TSP period. 100% of those who knew about the presence of community representatives in potable water services revealed that the groups were known as *Community Committees.* These were established alongside the District

Assemblies under the Local Government Act 462 (1992) as an aspect of Ghana's decentralization policy, which aimed at encouraging communities to participate fully in the management of their own economic, social, and political development (See Parkes, 2001). These community committees were therefore intermediaries between the community and any other development partner in any sphere of community development. Since their functions were not entirely focused on water, it was possible for some residents not to be aware of their responsibilities in that area, like the case of the 24 respondents.

The committees are usually made up of the Chief as the Chairman, and other locally influential persons who may occupy other positions such as the Secretary, Organizer, Treasurer and other Members. Key informant interviews with the officials of the public and private sectod partners of the TSP indicated that the committee at Dalun was recognized at the stage of community entry and constituted a source of consultation on the state of public water services and their opinion on the purpose of the TSP (Arnstein, 1968). Box 4.1 presents the organization and roles of the Community Committee in water services in Dalun, as a community-based civil society organization before the TSP, resulting from a focus group discussion with the Oalun Water Board.

Box 4.1: Roles of the Community Committee in water services before the TSP

The Dalun community had a Community Committee, with the Dalun Naa as the Chairman. The committee also had a secretary, an organizer, treasurer and other members. In the area of community water management, the committee appointed a member to be responsible for each standpipe. The roles of the representatives were revenue collection and reporting problems associated with service and distribution components to the executives, who then decided on whether to inform the GWCL or bear the responsibility of maintenance; depending on whether the fault was associated with a service or delivery component respectively. The facility representatives shared the monthly water bill which was determined by the lifeline rate or Increasing Block Tariff {IBT) method among households and *moved from house –t house* for the collection of contributions. There was no regulation of pipe flow.

Source: This study, 2011

The Tamale Water Optimization Project (TWOP), which involved the rehabilitation of water infrastructure and extension of services within the Tamale Metropolis and its peri-urban areas, compelled Viten Rand Water Services of The Netherlands which entered into a management contract (of the POPO category) with GWCL in November 2005, through its subsidiary branch-Aqua Viten Rands Ltd, to recommend the formation of community water boards to facilitate community ownership of the water system in areas described as poor, but benefiting from the same water services with the metropolis (SNV, 2007/2008), after financing the TWOP at a cost of £ 45,000,000 (TWOP Report, 2007 /2008).

The NGOs which were drawn in as private sector partners, with SNV playing a pioneering role, started by working with the Community Committee as a broad representative cross section of the community to achieve change objectives by establishing consensus between the parties, via the identification of common interests (Rothman, 1968) including service quality, cost sharing and tariff determination and collection.

Based on the realization that this earlier form of community participation did not perform well through a pre-intervention assessment as discussed in the next section, the private and public sector organizations moved for placation by negotiating for ground rules that allowed the community committee to advice, but retain for the public and private sector organizations of the TSP, the continued right to decide on the conditions of the partnership (Arnstein, 1968), which has been discussed at a later stage of this work.

4.4 Locality Development by Manipulation through the Assessment of the Performance of the Earlier Models in Water Tariff Collection

4.4.1 The tariff collection process under the earlier models before the TSP

Mainstream literature do not contain specific tariff collection processes under the public sector dominated models of water services such as the POO, which are also characterized by poor billing systems and huge sums of arrears by households (TWOP Report, 2007/2008 Water Aid Malawi, 2009).

A focus group discussion with a mixed gender group revealed that there have been changes in the tariff collection process in the Dalun area over time. In the 1990s, it was households that had to go to the station office of the then GWSC, where records of monthly water bills for each household were kept, to pay their bills. It was the responsibility of the station officers to share bills among households of a common public standpipe at that time. This period was associated with the typical POO, during which there were low tariff rates and little pressure from the service provider for payment of water bills (This study, 2011). In other words, the supply of public water to the poor was virtually free (TWOP Report, 2007-2008).

After the 'privatization' of water in Ghana, and between the late 1990s up to 2006, the high level of water bill arrears compelled management of the GWCL to involve the community committee in the reception and sharing of water bills among households of common public standpipes. The committee was also responsible for record keeping, sharing and the collection of the bills and making final payment to the GWCL station office. However, the community committee was not specifically established for water (Parkes, 2001) and no formal training was given to the members responsible for water tariff collection (Kelly *et al*, 2001). Additionally, their role was considered as a communal responsibility and so no commission was paid for their services. To worsen the situation, some committee members as well as GWCL officials became corrupt and misappropriated the collected water bills (Kendie, 1992). The Community committee was not also involved in tariff determination, and their participation in other aspects of water management was generally low. Accordingly, all the tariff collection processes before the TSP period failed to measure up to expectation. The next section presents a picture of the performance of their methods.

4.4.2 The performance of the earlier models in the tariff collection process before the TSP

In view of the administrative incompetence, poor capacity building and ill-motivated community structures, losses in public sector water revenue in Ghana amounted to 80% in previous service delivery models (TWOP Report, 2007). This thesis has taken a year immediately before the TSP intervention period of 2007 (that is 2006), for a quantitative assessment of the tariff collection process before the intervention and a year immediately after the intervention. The justification

was to facilitate a comparison between community participation without a pro-poor orientation, and a planned pro-poor community participation in water tariff collection in the PPP model of water services (Water Aid Malawi, 2009). This section has focused on the former case.

Plates 4.1, 4.2 and 4.3 show sample pages of the statement of water bills covering the year 2006 (before the TSP) for Dalun Station, Dalun Nayili Fon and Dalun Kanbong Naa Fon respectively, and from which totals were taken for the assessment. The debit columns show the water bill for the associated month in the date column, while the credit columns indicate the amount settled for each monthly bill. For the whole of the year 2006 the Community Committee collected and paid water bills for the months of October and November only, the values being the figures GH¢88 and GH¢70 respectively. It is interesting to note that all the three zones had the same credit figures for the year 2006, in other words they paid nothing for water before October/November 2006.

Plate 4.1: An annual statement of water bills covering the year 2006 for Dalun Station (before the TSP).

GHANA WATER COMPANY LIMITED

CUSTOMER DETAILS

DALUN STATION ✔

KUMBUNGU
TAMALE
641 - STAND PIPES

STATEMENT OF ACCOUNT

CUSTOMER NUMBER
641-08-0011

STATEMENT DATE
24/07/2009

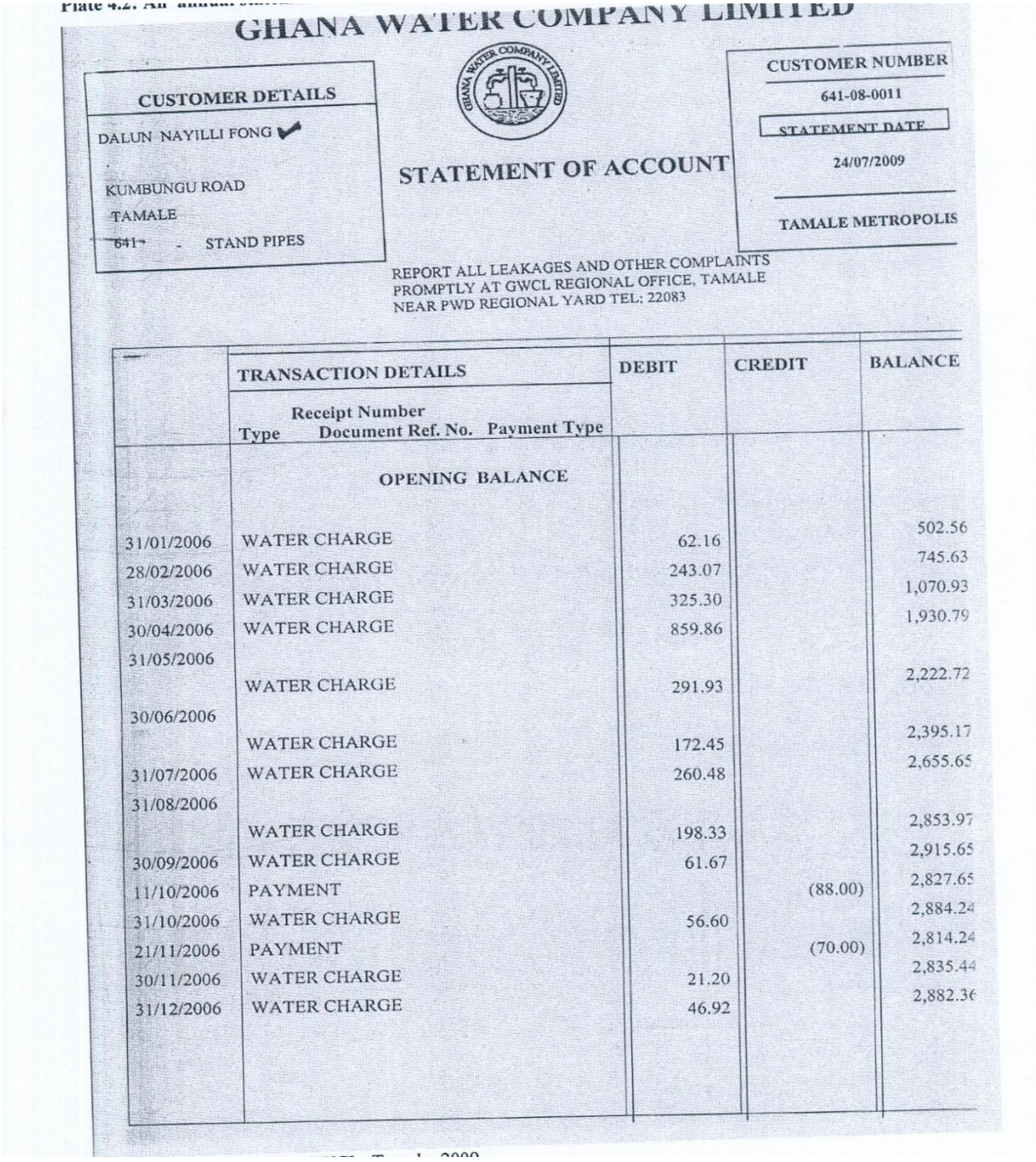
TAMALE METROPOLIS

REPORT ALL LEAKAGES AND OTHER COMPLAINTS
PROMPTLY AT GWCL REGIONAL OFFICE, TAMALE
NEAR PWD REGIONAL YARD TEL: 22083

DATE	TRANSACTION DETAILS			DEBIT	CREDIT	BALANCE
	Type	Receipt Number / Document Ref. No.	Payment Type			
	OPENING BALANCE					
31/01/2006	WATER CHARGE			238.96		1,569.17
28/02/2006	WATER CHARGE			43.05		1,612.23
31/03/2006	WATER CHARGE			311.76		1,923.98
30/04/2006	WATER CHARGE			217.38		2,141.37
31/05/2006	WATER CHARGE			27.57		2,168.94
30/06/2006	WATER CHARGE			294.10		2,463.04
31/07/2006				37.25		2,500.29
31/08/2006	WATER CHARGE			43.53		2,543.82
30/09/2006	WATER CHARGE			83.20		2,627.02
11/10/2006	PAYMENT	0028415	CASH		(88.00)	2,539.02
31/10/2006	WATER CHARGE			45.71		2,584.73
21/11/2006	PAYMENT	0028618	CASH		(70.00)	2,514.73
30/11/2006	WATER CHARGE			51.80		2,566.53
31/12/2006	WATER CHARGE			46.92		2,613.45

Source: Commercial Unit, GWCL- Tamale, 2009

Plate 4.2: An annual statement of water bills covering the year 2006 for Dalun Nayili Fon (before the TSP).



GHANA WATER COMPANY LIMITED

CUSTOMER DETAILS	CUSTOMER NUMBER
DALUN NAYILLI FONG	641-08-0011
KUMBUNGU ROAD	STATEMENT DATE
TAMALE	24/07/2009
641 - STAND PIPES	TAMALE METROPOLIS

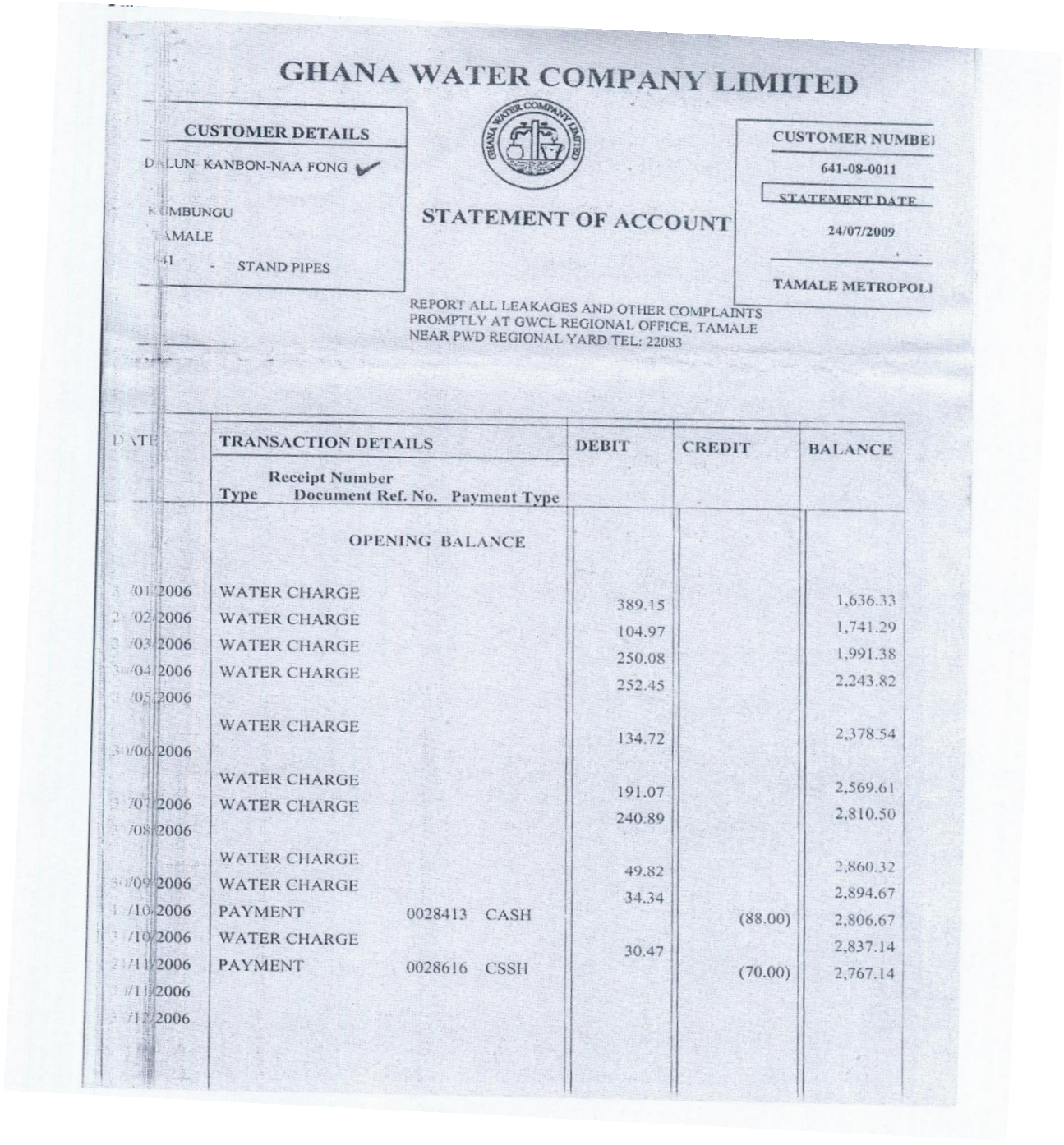
STATEMENT OF ACCOUNT

REPORT ALL LEAKAGES AND OTHER COMPLAINTS PROMPTLY AT GWCL REGIONAL OFFICE, TAMALE NEAR PWD REGIONAL YARD TEL: 22083

	TRANSACTION DETAILS		DEBIT	CREDIT	BALANCE
	Type	Receipt Number Document Ref. No. Payment Type			
		OPENING BALANCE			
31/01/2006	WATER CHARGE		62.16		502.56
28/02/2006	WATER CHARGE		243.07		745.63
31/03/2006	WATER CHARGE		325.30		1,070.93
30/04/2006	WATER CHARGE		859.86		1,930.79
31/05/2006	WATER CHARGE		291.93		2,222.72
30/06/2006	WATER CHARGE		172.45		2,395.17
31/07/2006	WATER CHARGE		260.48		2,655.65
31/08/2006	WATER CHARGE		198.33		2,853.97
30/09/2006	WATER CHARGE		61.67		2,915.65
11/10/2006	PAYMENT			(88.00)	2,827.65
31/10/2006	WATER CHARGE		56.60		2,884.24
21/11/2006	PAYMENT			(70.00)	2,814.24
30/11/2006	WATER CHARGE		21.20		2,835.44
31/12/2006	WATER CHARGE		46.92		2,882.36

Source: Commercial Unit, GWCL- Tamale, 2009

Plate 4.3: An annual statement of water bills covering the year 2006 Kanbong Naa Fon (before the TSP)



GHANA WATER COMPANY LIMITED

CUSTOMER DETAILS

D LUN KANBON-NAA FONG ✔

K MBUNGU

AMALE

41 - STAND PIPES

STATEMENT OF ACCOUNT

CUSTOMER NUMBE

641-08-0011

STATEMENT DATE

24/07/2009

TAMALE METROPOLI

REPORT ALL LEAKAGES AND OTHER COMPLAINTS PROMPTLY AT GWCL REGIONAL OFFICE, TAMALE NEAR PWD REGIONAL YARD TEL: 22083

DATE	TRANSACTION DETAILS	Receipt Number	Type	Document Ref. No.	Payment Type	DEBIT	CREDIT	BALANCE
	OPENING BALANCE							
/01/2006	WATER CHARGE					389.15		1,636.33
/02/2006	WATER CHARGE					104.97		1,741.29
/03/2006	WATER CHARGE					250.08		1,991.38
/04/2006	WATER CHARGE					252.45		2,243.82
/05/2006	WATER CHARGE					134.72		2,378.54
/06/2006	WATER CHARGE					191.07		2,569.61
/07/2006	WATER CHARGE					240.89		2,810.50
/08/2006	WATER CHARGE					49.82		2,860.32
/09/2006	WATER CHARGE					34.34		2,894.67
/10/2006	PAYMENT	0028413	CASH				(88.00)	2,806.67
/10/2006	WATER CHARGE					30.47		2,837.14
/11/2006	PAYMENT	0028616	CSSH				(70.00)	2,767.14
/11/2006								
/12/2006								

Source: Commercial Unit, GWCL- Tamale, 2009

Table 4.12 gives the total annual water bills (from January to December 2006) for the three zones, and the actual amounts collected by the Community Committee for the GWCL, derived from the annual statements above.

Table 4.12: Annual water bills and amounts collected by the Community Committees before the TSP intervention- 2006

Community	Year	Total Debit (GH¢)	Total Credit (GH¢)	Percentage of Bills Settled
Dalun Station	2006	1441.17	158	11%
Dalun Nayili Fon	2006	2599.91	158	6%
Dalun Kanbong Naa Fon	2006	1675.99	158	9%

Source: Commercial Unit, Ghana Water Company Ltd.-Tamale, (2006 Report)

Summary of Table 4.12:

Total debit balance for 2006 = GH¢ 5717 .07

Total credit balance for 2006 = GH¢ 474

Percentage of bills in arrears for 2006 = 92%

The 92% loss of revenue confirms a statement by the Head of the commercial unit of the GWCL in an interview at Tamale, that the Northern Region has the highest revenue/supply difference in public water services in Ghana. The equal credit balances for the three zones generate some interest worth clarifying. The water bills collected and paid for the months of October and November 2006 summed up to GH¢158 for each of the three zones. An interview with the senior station officer at Kumbungu, who assisted in obtaining the bill statements, revealed that the Community Committee had problems in collecting water bills from the people in the year 2006, like other years before. However, observation results indicated that apart from the Community Committee, the Assemblyman of the area coordinated the activities of the committees in water tariff collection. He kept records of water bill statements for all the zones of Dahm as well as receipts of payment, and in fact, made final payment of the collected water bills on behalf of the committee to the GWCL (which was informal and contrary to provisions in Box 4.11. The reason

was that the committee was ineffective in the collection of the bills and has been accused of corrupt handling of the paid bills by the people. Both the Assemblym and the Tolon/Kumbungu District Chief Executive in a telephone interview confirmed that within the period, the TKDA paid no subsidies for water from the Poverty Alleviation Fund (to have influenced the equal nature of the bills paid). This was to verify an earlier interview results with the GWCL station officer at Kumbungu, that the TKDA could subsidize community water bills.

One could therefore deduce from the above that the equal figures for the bills paid for the three zones were manipulated by those who handle the paid bills just before they get to the revenue unit of the GWCL in Tamale. According to Bacho (2001), embezzlement of paid water bills could be by both committee members and the GWCL officials. Kendie, (1992) also added that misappropriation of collected bills accounted for high level of revenue losses to the former GWSC prior to the privatization of the water sector (see Table 4.13). The station officer also added that an attempt to introduce cash-and-carry by the committee as a remedy to the increasing tariff arrears in that period failed to receive the cooperation of the people (see Carballo, 2008; Zibechi, 2008).

Earlier sections of this chapter have proven statistically that a number of factors were correlated to the willingness to pay for water before the TSP period, including the occupation, the income level and the type of model in use among others (This study, 2011). Table 4.13 presents respondents' views on the poor tariff collection situation before the TSP period.

Focus Group Discussion results with the men and women's groups also revealed that traditional factors such as the perception of the main source of water for the GWCL as the community's environmental resource, which is a free gift of nature affected the WTP before the TSP period. Table 4.13 shows that all the factors in the WTP function (Munasinghe, 1992) have manifested themselves, even though the actual mathematical computations of these factors are beyond the scope of this thesis.

Table 4.13: Major Reason for the poor tariff collection situation before the TSP intervention

Reasons	Frequency	Percent (%)
Poverty	51	63.8
Poor services	1	1.2
Low participation	1	1.2
Lack of trust in the billing process	7	8.8
Misappropriation of paid bills	5	6.2
Poverty and misappropriation of bills	7	8.8
Poverty and lack of trust in the billing process	4	5.0
Poverty and low participation	4	5.0
Total	**80**	**100.0**

Source: This study, 2011

Qualitatively, poor service relates to the comparison of present service quality (R) to the service quality consumers expect to receive (R *); poverty relates to income or the influence of other economic factors (Y); while low participation, lack of trust in the billing process and misappropriation of paid bills relate to other explanatory variables **(Z)**. The degree of influence of the willingness to pay or effective demand (D) on the reasons has been expressed in percentages in Table 4.13, as well as by correlation coefficients in the previous sections. These results are consistent with related research findings such as those established by Water Aid Malawi (2009) and Kelly *et al* (2001). With respect to Castro's (2005) view however, it can be observed that even the involvement of the community committee in the tariff collection process did not carry any deliberately planned pro-poor service conditions, and when there are deviations from the expectations of the poor, they could result into unwillingness to share in maintenance cost or pay for facility user bills, or lead to social disorganization or altruism (Byron, 1989; CJPR, 1999), like the case of Cochabamba (Zibechi, 2008).

It was also proven statistically that a Pearson correlation coefficient of -0.28 (28%) at 0.012 significant level existed between the zones and WTP (the negative value mean that as tariff rates increased WTP reduced), but when committee activities were introduced as a control variable,

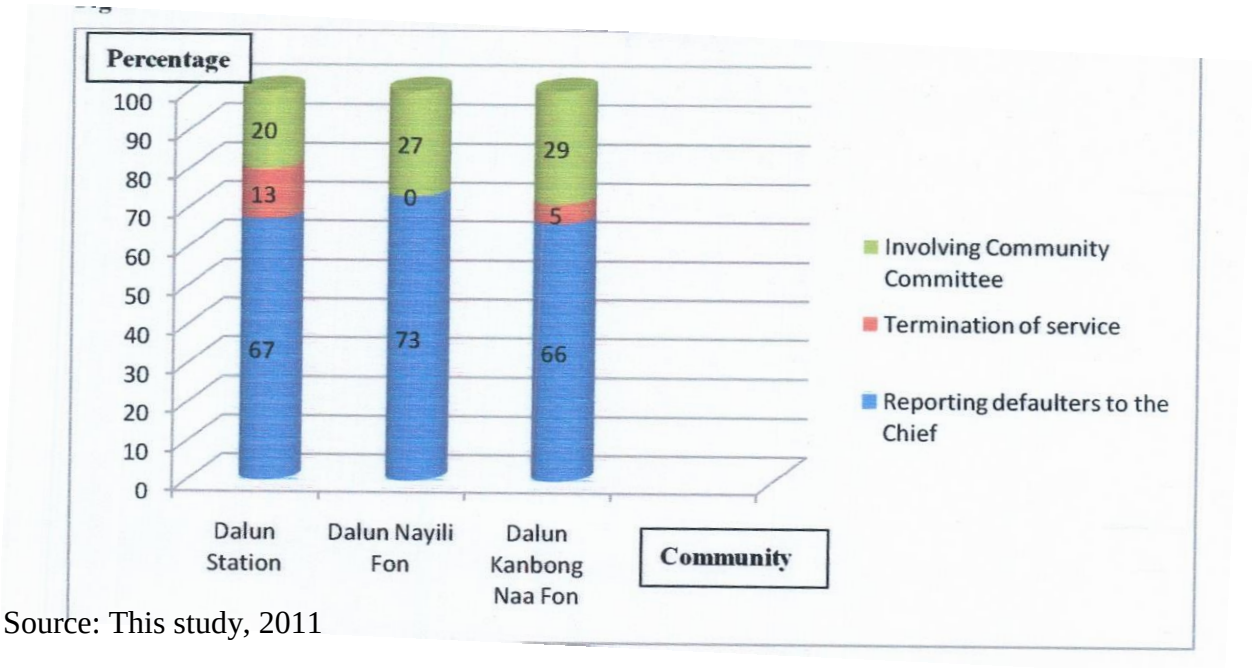
there was a poorer significant level of 0.103 and a partial correlation coefficient of -0.185(18.5%), which is not of statistical relevance, but indicates that community participation improved upon the WTP (since -0.185 > -0.28. In other words arithmetically, an improvement from a negative value or inverse relationship must first approach zero before assuming increasing positive values) (Korey, 2010). Thus any alteration that leads to improvement in any or all of the factors in the WTP function (Munasinghe, 1992) would equally have effect on water use behaviour in the area (Abrams, 2000/2001). At a further stage attempts have been made to see how the TSP made impacts in these directions qualitatively.

4.4.2.1 Previous adoptive strategies in relation to the poor tariff payment and collection before the TSP

Theoretically, though public corporations are established to provide essential services to the public in order to maximize social welfare, they are not meant to run at a loss. The effective management of a state owned enterprise should lead to break-even or at least, the ability to meet the firm's average variable cost or operational cost of providing the services (Osei, 1983; Amanfo, 1990). It is the inability of the former GWSC to achieve this aim that led to its privatization (Kendie, 1992). Since the relationship between poverty and potable rater supply has been recognized as a major challenge but an unavoidable state responsibility in developing countries (Mestrallet, 2001), some form of coping strategies were put in place in th Dalun area to either neutralize or minimize the problems of poor tariff collection and payment. Figure 4.9 presents responses on previous adoptive strategies on the tariff situation.

Figure 4.9 shows that the most popular strategy for the unpaid water bills was by reporting defaulters to the Chief of Dalun (Dalun Naa), with a response rate of 66%, who could impose an injunction against the defaulters with the assistance of the Kanbong Naa, by setting deadlines for payment. This power of the Chief, however, gave the opportunity to members of the royal family to use public water without payment, since committee members feared to report the Chiefs own relatives to him.

Figure 4.9: Previous adoptive stratepes on water tariff arrears before the TSP



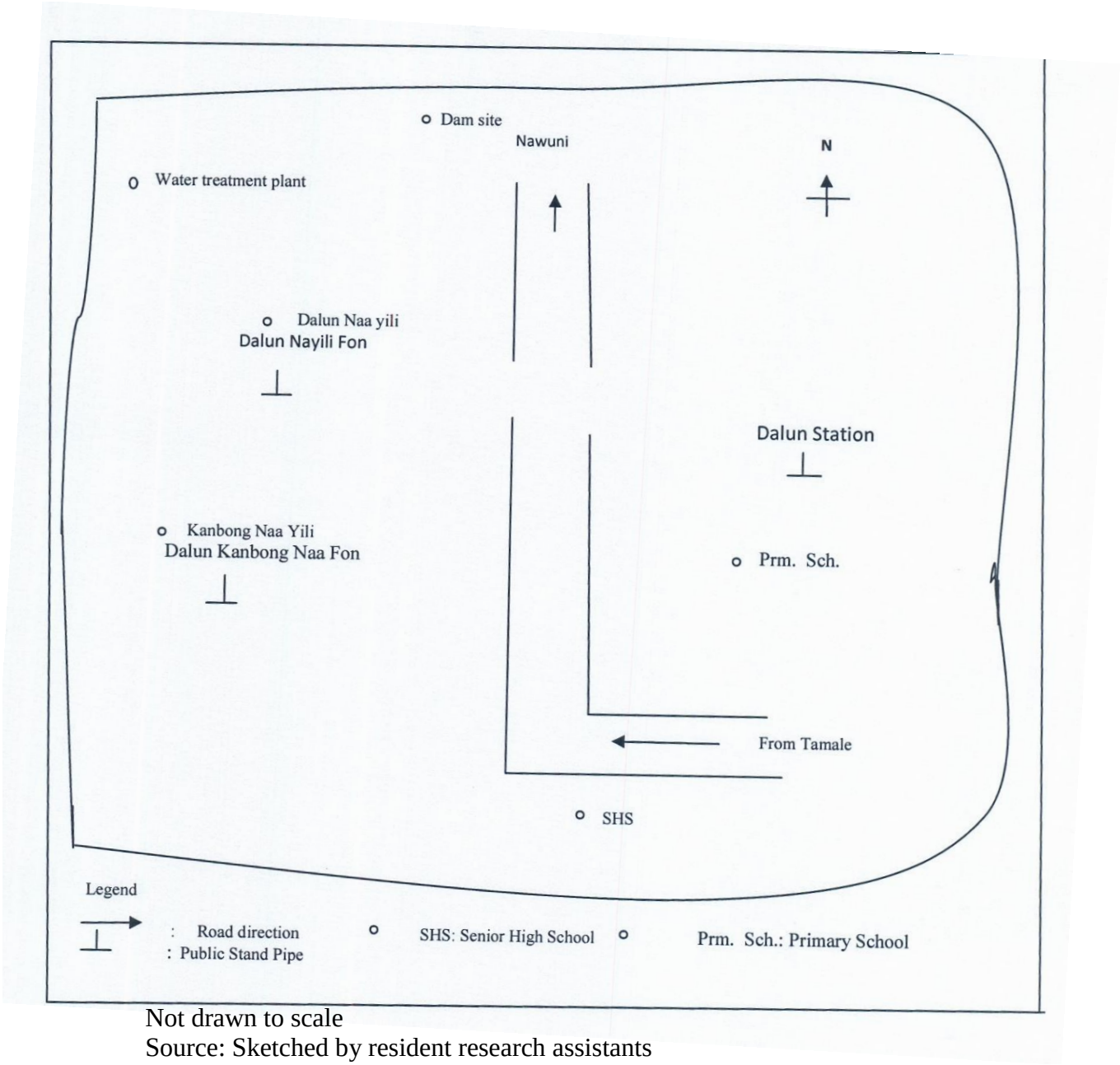
Source: This study, 2011

This partially explains why tariff collection before and after the TSP intervention has remained poorest at Dalun Nayili Fon (where the Chiefs Palace is located), while the influence of the Kanbong Naa (Executioner) could also affect tariff performance at Dalun Kanbong Naa Fon. Plate 4.4 shows the locations of the three zones sampled for the study and the relative positions of the palaces of the traditional leaders (the Chief and Executioner) to the public standpipes in Dalun.

In Plate 4.4, Dalun Naa Yili stands for the Palace of the Chief of Dalun, and Kanbong Naa Yili also stands for the Palace of the Chief Executioner.

The second major approach was by arbitration by the Community Committee with 29% response rate. The committee could deny the defaulting households of services until payment was effected or by making recommendations to the GWCL to terminate services to all users of a particular standpipe if the defaulters were many. This had a response rate of 5%.

Plate 4.4 : A sketch map of Dalun showing the location of standpipes in the study zones



Not drawn to scale
Source: Sketched by resident research assistants

This was, however, rarely done in order to prevent disorganization. (See Byron and Robert, 1989).

A key informant interview with a senior GWCL station officer at Kunbungu, revealed that as a last resort, the District Assembly paid for heavily indebted public water users of via the District

Poverty Alleviation Fund at the end of a service year. This was to reduce *water poverty* (See Castro, 2005), and prevent some natives from puncturing the main intake line as well as delivery and service pipelines in order to obtain quality water. The District Assembly intervention was also not guaranteed as it depended on the availability of surplus funds, and there was no evidence of its application within the study period. This strategy was practiced in Philippine, where increasing water tariffs in the western district compelled the government to declare water tariff hikes (JICA, 1997).

Though some form of community participation existed before the TSP in Dalun, the ability of the Chief and the Community Committee to effectively ensure water tariff collection necessitated some other form of intervention if public water services to the poor were to continue on sustainable bases. This leads us to the TSP period.

4.5 The Influence of Social Planning by Placation and Partnership on the Factors that Accounted for the Formation of the TSP in Pro-poor Water Tariff Collection

4.5.1 Reasons for the formation of the TSP

Box 4.1 impliedly provided some information on the institutional framework for the management of water services in the Dalun area before the TSP. It was established in the previous discussions that this arrangement provided a basis for tokenism, involving formation exchange between the parties. The apparent poor performance in water tariff collection was considered as being caused by the weaknesses of the existing institutional framework before the TSP among other socio-economic factors, especially with regards to the extent and nature of community-based civil society involvement in the management of the water system. Statistically there was a contingency coefficient of 0.484 or 48.4% at a significant level of 0.006. This is acceptable compared to the cutoff point of 0.05, meaning that community participation has a positive relationship with water tariff collection, but the 0.484 coefficient is low compared to the perfect coefficient of + 1 (Sirkin, 1999). Since the situation was not satisfactory, it justified the need to move to placation after tokenism (Arnstein, 1969) by social planning (Rothman, 1968) for a better institutional framework and a stronger level of community participation {Midgley *et*

al, 1986; Millar, 2007). Key informant interviews and focus group discussion with officials of the public-private sector partners and the Water Board respectively, indicated that the TSP in the Dalun area consisted of representatives from three main sectors, namely the public, private and community representatives. Table 4.14 is a presentation of the institutional composition of the TSP and their objectives in the partnership.

Table 4.14: Institutional composition and their purpose in the TSP

Table 4.14: Institutional composition and their purpose

Name of institution	Date of joining the TSP	Objectives of membership of the TSP
Public sector: GWCL/AVRL	2006	.To contract the private sector to rehabilitate and expand the physical infrastructure for potable water supply .To provide quality water regularly to the people . To generate adequate revenue from investment with special consideration for the poor.
Private sector: SNV and Pragmatic Outcomes Incorporated	2007	. To foster the relationship between the community and the GWCL .To facilitate community participation in decision making .To build the capacities of community structures for the management of the water supply system. . To collectively monitor project activities for accountability
Community level: Community Water Board	2007	To take control over the management of the stand-pipes; to carry out effective revenue collection; to prevent waste of water and to alert service providers on detected faults in order to reduce non-revenue water.

Source: This study, 2009

The table presents the various partners of the TSP, the definitions of which constitute the initial stage of placation by the public-private sector organizations (Arnstein, 1969), and supports the information in Figures 2.1 and 2.3 in chapter 2. It involved collective planning by the stakeholders to promote locality development, and thus constituted the stage of social planning (Rothman, 1968). The objectives of the partners thus constituted the purpose of the TSP. The successful implementation and achievement of these institutional roles contributed somehow, towards some benefits that brought about some level of social and financial stability in the

interests of the private and public sectors, as well as the community Water Boards, which has been discussed later in this work.

From the stages of tokenism and placation, it became necessary to examine how the actual partnership was established by the birth of the new community participatory facet, that is, the change from the Community Committee to the Water Boards, and the subsequent fomalization of the TSP agreement.

4.5.2 The formation of the Water Boards for Social Action by Delegated Power for their Incorporation into the Pro-poor Water Tariff Collection Process

Though this section is an aspect of Social Planning (Rothman, 1968), Rothman's Community Organizing Model failed to come out with a specific way of executing this stage in community development issues. Fortunately, Kathy's five-phased Community Institutional Participatory Management Model (Kathy, 1999) provided a systematic way of establishing and incorporating local community-based civil society groups into multi-stakeholder partnerships such as the TSP, which has been modified and applied for the assessment of the practical situation in Dalun, and as a basis for a shift from descriptive/explanatory research (before the TSP) to phenomenological research applications (after the TSP since the Water Boards are still functional) as described below.

Phase I: Identification of pre-conditions for success

This phase was carried out at the stages of tokenism and placation as described earliar, in which the Community Committee was consulted initially by SNV and the GWCL/AVRL for their views on the water management situation, especially the inability of the people to effectively pay their water bills due to poverty, and the effects on service quality and revenue losses to the GWCL/AVRL. This led to the mutual conclusion that the situation was bad and that an alternative approach was necessary. The committee also expressed interest in the purpose of the TSP and the associated role of the community to select representatives to constitute the Water Board independently of the Community Committee. Without this stage the scheme could be unsustainable for lack of beneficiary support and revenue collection could be difficult. The public-private sector partners (power holders) at this stage applied citizens' manipulation and

therapy in which the Community Committee participated passively and by information giving (Midgley *et al,* 1986; Obeng, 2008; Millar, 2007).

Phase II: Implementation of the Participatory Management Plan

At this stage SNV which is a non-profit oriented NGO originating from the Netherlands, and centered on positive attitudinal development in local communities for achieving and sustaining development interventions, was contracted to engage other local NGOs to facilitate the establishment of the community Water Boards as well as their capacity building for their defined roles by delegating power to them. Phase II was also associated with the definition of all the partners as presented in Table 4.14. SNV solicited the concern of Pragmatic Outcomes Incorporated (POI) - a local NGO in the Tamale Metropolis, to carry out the tasks of establishing and training the Water Boards at Dalun. POI accordingly formed an umbrella Water ten member subsidiary Water Board for each public standpipe in all zones of Dalun as provided in Table 3.1 in chapter 3, beginning from February 2007 (POI, 2008; SNV, 2007/2008)

POI implemented the formation of the Dalun Water Boards as presented in Box 4.2. In the actual determination of appropriate methods of tariff collection as indicated in Box 4.2, POI allowed the Water Boards to identify the problems and to come out with solutions that fit well in their own economic and socio-cultural backgrounds, thus ensuring authentic participation. (See Midgley *et al*, 1986; Kathy, 1999; Millar, 2007; Obeng, 2008). In terms of capacity building or training of the Water Boards, POI was responsible for ensuring the effective understanding and execution of their defined roles as contained in Table 4.06 and Box 4.2. Also the partnership arranged for the training of responsible members of the Boards on technical aspects such as replacement or mending of leaking or damaged service pipelines, repairs of other standpipe components and meter reading for monthly water bill estimation by the technical GWCL/AVRL.

This was consistent with Abrams view that the abilities and skills of local people need to be built in order to ensure effective delivery of services (Abrams, 2000/2001). Issues of commission to Water Board members were also discussed, and it was agreed that the GWCL/AVRL was to pay 20% of collected water bills to the Water Board. In addition, this second phase involved the

establishment of monitoring and evaluation strategies at two stages: the ongoing evaluation by POI, and the end or post intervention evaluation by all stakeholders.

Box 4.2: The formation and functions of the Dalun Water Boards

An Umbrella Water Board (which makes decisions and bye-laws for the management of system) was first established under the chairmanship of the Dalun Naa. Ten-member Zonal Water Boards were then established for each public standpipe instead of individual representatives under the old committee. Each Zonal Water Board had a leadership structure comprising the Chairman, Secretary, Organizer, Treasurer and six other Members with special responsibilities such as water bill collectors, technical men (e.g. plumbers), and leakage/fault detectors and reporters. The Boards are responsible for participating in tariff determination by bargaining, the management of their respective standpipes involving the rationing of water by regulating pipe flow, maintanance of service parts, reporting complicated break-downs to GWCL/AVRL officials and water tariff sharing and collection according to their defined responsibilities. Under the new system monthly bills are shared and collected at the stand-pipes as households come to draw water. Defaulters are The Board records household bills as well as payments made by simple book-keeping me on the training received. The treasurer keeps all collected bills and makes final payment to the GWCL officials at the station office in return for receipts of payment.

Source: FGD with the Water Board members and interview with SNV officials, 2009

Before the close of the year 2007, the development of the Water Boards for the community ownership of the water system had been completed and a partnership agreement signed between the GWCL/AVRL, SNV, POI and the Water Boards. Social action thus began at phase II.

Phase III: Identification of constraints

In this phase, SNV facilitated an internship assignment research to identify and inform the GWCL to address any technological constraints. The research was also meant to assess the effectiveness of POI in the facilitation of the Water Boards through the performance of the latter. The major constraints identified included the following:

1. The pro-poor tariff determination process and associated constraints

The partners realized that it was difficult to adopt a Marginal Cost Pricing (MCP) scheme since the determination of the average income level on which the MCP could be based

For instance, a strategy such as the 5% rule often proposed by some writers like Alexander (1993), was considered impossible in Dalun. This is because as a predominantly agrarian society their incomes are not stable. (See Kendie, 1992; Seini, 2001). The alternative was to adopt a tariff rate based on the outcomes of bargaining among the GWCL/AVRL and the Umbrella Water Board, which led to the adoption of 2Gp as the tariff rate for 18 liters of water as the basic unit. The participation of the Water Board was important because the local participants helped in determining their consumption patterns and expenditure priorities and then helped to set the tariff rates in accordance with the local conditions and social objectives in a collective interest. This, according Botchwey (2006), brings about a win-win situation. Without this component of the intervention, there would have been the problem of project sustainability due to the inability of the poor to pay.

The long-run effects of implementing the identification of constraints with community participation (Phase II) was therefore to increase the net benefit (NB) from pro poor water supply by the public/private sector partners of the TSP, and consumption as expressed in the NB function by Munasinghe (1992). This is because the situation brought about improvement from the existing service quality (R) to the service quality consumers expected to receive (R *), reduced inconveniences suffered by consumers (QC) such as interrupted services due to technical failures, and enabled the service provider to meet the supply cost (SC) on , sustainable basis through improvement in the net water tariffs collected. Also, the findings in the later sections indicate that there was an improvement in the WTP (D) as a result of a number of factors including community participation in water tariff or price setting (P). With the increase in NB and improvement in R *, total benefit (TB) for all partners of the TSP was partirlly realized and contributed to the enjoyment of perfect service quality (RP) in pro-poor water services, as expressed by Munasinghe (1992).

2. Technological constraint

A major weakness in the implementation of phase II by the Dalun TSP was that it failed to consider the relationship between the average income levels of the beneficiaries for the adoption of a water supply technology that could be considered as low cost, for the pomotion of

affordability in terms of the associated service charges. The refined model at the final stage of this thesis suggested a solution to this problem.

Phase IV: Impact evaluation

This has been looked at earlier in this section, and as phases II and IV overlap in their contextual applications in this study, this has been avoided. Phase V also looks at lessons learnt which has been postponed until the final chapter for logical reasons.

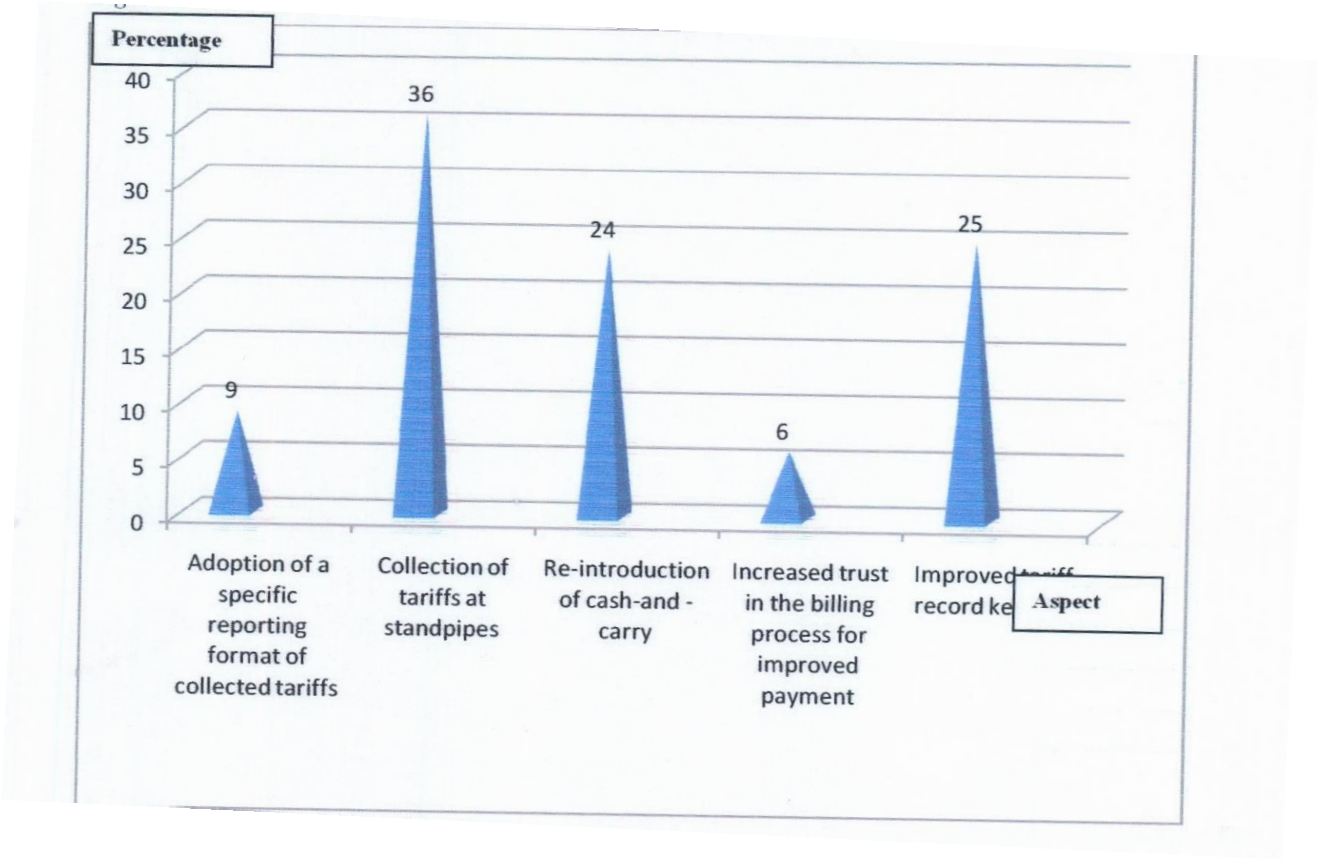
4.6 The pro-poor tariff collection process by the Water Boards as citizen contlrol

Through passive participation, information giving, consultation and interaction, the locality development and social planning stages were reached by passing through citizens' non-participation to tokenism for problem identification and consensus building for the establishment of the TSP in pro-poor water tariff management.

This section presents an assessment of the role of the Water Boards in the water tariff collection process as they became fully operational by attaining the stage of citizen control over the tariff collection process as functional participants. (See Midgley *et al*, 1986; Millar, 2007; Obeng, 2008). It has been established that the Water Boards participated in water tariff determination, received training in meter reading to ensure reliability of water bills, simple book-keeping, rationing of water, fault reporting and system maintenance. Based on this foundation they were allowed to practice the tariff collection methods they had been trained on (as described in Box 4.2).

Figure 4.10 presents respondents' views on what made the tariff collection process after the TSP intervention different from earlier methods. It illustrates the distinguished characteristics of the pro-poor water tariff collection process by the Water Boards in the study area. The most important one was the change from house-to-house collection to the collection of the monthly household water bills at the public standpipes with a response rate of 36%. The next in importance was improved record keeping by the application of the appropriate book-keeping methods based on the training given to the Boards for effective accountability, or to avoid misappropriation of collected water tariffs, which rated 25% .(See Water Aid Malawi, 2008).

Figure 4.10: Distinguished aspects of tariff by the Dalun Water Boards



Source: This study, 2011

Figure 4 .10 also depicts that there were flexibilities in the tariff collection methods based on the discretion of the Umbrella Water Board, which depends on household attitudes towards payment of bills. This is evidenced by the relatively significant level of the recognition or the reintroduction of the cash-and-cany method with a response rate of 24%.

A focus group discussion with the Water Board members revealed that when the total household debit balances in the record book becomes too high, cash-and-carry (instant payment for water services) is used for household water demands to prevent further increases in zonal arrears until previous debit balances have been reduced. The apparent success of the cash-and- carry system after the TSP intervention was due to public education through community fora by the Umbrella Water Board. Other aspects were the adoption of a specific reporting format based on the new book keeping principles, and increased trust in the billing process, due to local participation in meter reading and water tariff determination.

The actual allocation and collection process for the current bill *(Cb)* among houses is carried out by making use of the house tariff record book containing the name of each house *(H),* the number of households *(nh)* in each house and total number of households using the standpipe *(Tnh).* The present bill per house *(PbH)* is calculated based on the burden each house imposes on the water system (Source: Phone interview with the Assemblyman of Dalun, HJ2011; see also Munasinghe, 1992; Whittington, 1992; Kelly *et al,* 2001), which is usually expressed as a percentage and multiplied by the *Cb* and then adding any previous unpaid bills (p*b).* This is expressed below:

$$PbH = [(nh/Tnh \times 100) \times (Cb)]/100 + pb$$

The sum of H (∑H) is known for each standpipe in the three zones under study; for Dalun station ∑H *=50,* Dalun Nayili Fon ∑H= *30* and Dalun Kanbong Naa Fon ∑H= *48* (see Table 3.2, chapter 3). (For instance if there were 120 households at Dalun Station in the year 2006, then a house with 6 households would have paid [(6/120x100) x 37.25]/100=J.8625 assuming the house owed no arrears *(pb=O).* About GH¢1.86 or ¢18,600 as *PbH* would have been shared among the 6 households in that house in July 2006).

The proportion $PbH = [nh /Tnh \times 100]$ is reviewed annually for up-dating of house tariff records due to changes in the *nh.* The Water Board then distributes the PbH value for each house to the respective landlords or caretakers. At the house level the *PbH* value for an particular house is shared by a criterion agreed upon by all households in that house, usually at a meeting chaired by the landlord or caretaker. Participant observation results show that most uses adopt a flat rate for the sharing of the *PbH.* According to Munasinghe (1992), Whittington (1992) and Nkrumah (2004), this strategy could be regressive to smaller and poorer households, with negative implications for their commitment to contribute their bills promptly at the house level, because of varying consumption levels. According to the MLGRD (2006) and the wealthier households are the most populous, thus a flat rate for the rich and the poor could influence the poor performance of zonal tariff payment and collection with increasing arrears.

A weakness of the role of the Water Board in the TSP in the tariff collection process was therefore the inability to set rules of behaviour associated with hierarchies, and to carefully design the tariff determination and collection procedures from the house level up to the Board. (See Alan and Allen, 2000; Castro, 2005). The Water Boards partially failed to incoporate the support of the local people from the household level through a more participatory local decision making process, which according to Pateman (1970), and Martinussen (1997), constiture the core of society and from which the civil society group itself is built and so crucial for improving the tariff collection process. The next section presents quantitative and qualitative assessments of the pro-poor water tariff collection process in Dalun.

4.7 Assessment of Social Action through the Performance of the Community Water Boards in the Tariff Collection Process as Citizen Control.

The application of the Rothman and Arnstein's models (Arnstein, 1969 and Rothman 1968) has come to an advanced stage as both have reached their climax in the assessment of the TSP model in pro-poor water tariff collection at Dalun. Since the Rothman's Community Organizing Model has been the over-arching theory with Social Action as the last stage, we now determine how the last rung of Arnstein's Ladder of Community Participation which is Citizen Control (as the major supporting theory), has contributed to the effectiveness of the Social Action. The subsections that follow present pictures of the successes or failures of this integrated approach.

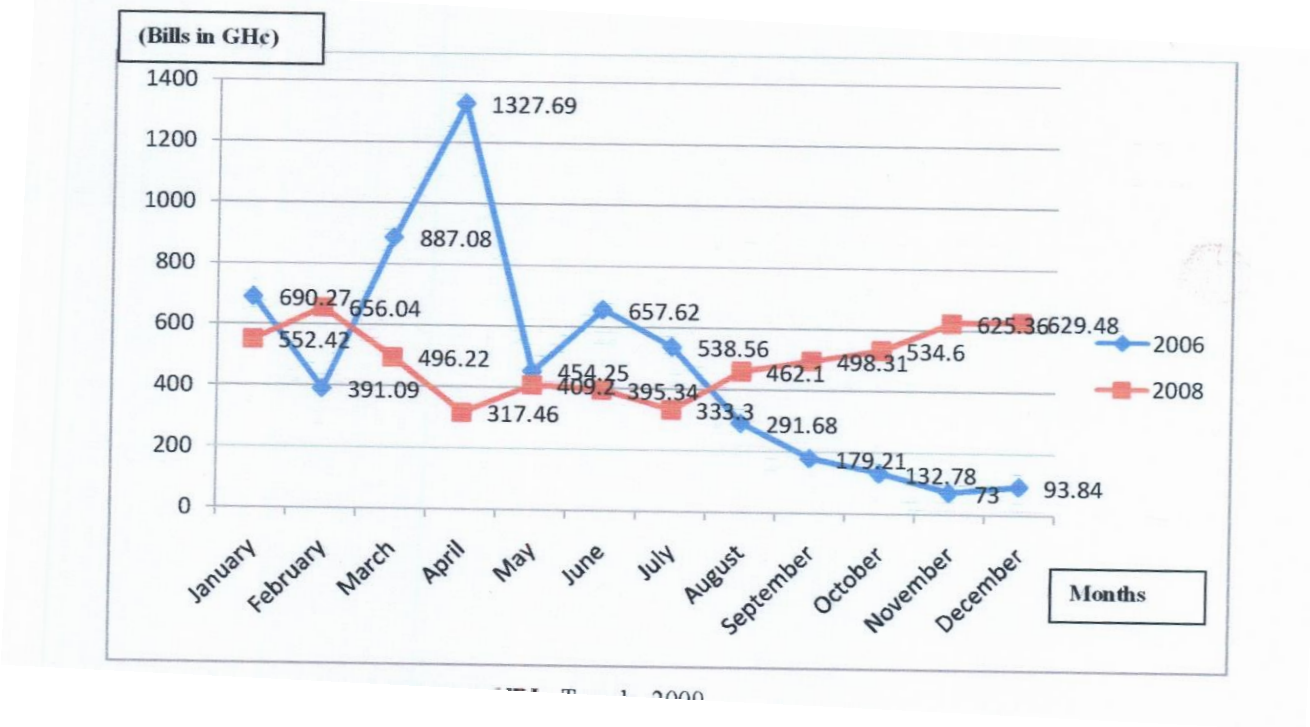
4.7.1 The water tariff situation after the TSP intervention

We now assess the strength of the dualistic relationship between capacity building and sustainability, as the community is now left to function independently in its own microcosm, but for the attainment of the mutual interests of the tripartite (TSP). To begin with, there is the need to present quantitative data on water tariffs collected after the TSP intervention on which further analysis shall be based. Of particular importance in this section of the analytical unit was the stage of Impacts Evaluation based on Kathy's participatory management model (Kathy, 1999). The concept of sustainability and lessons learned, as well as policy implications of the findings of the study are considered under the summary and conclusion chapter.

Quantitative secondary data on monthly water tariffs for a year before and a year after the TSP intervention (2006 and 2008 respectively) were obtained from the GWCL (Tamale), to facilitate comparative analysis. This is because the TSP in the area was a one year pilot project (SNV, 2008), hence any data that falls outside this range would not best reflect the TSP's performance in the specified area of study. Thus, the main concept measured is the effectiveness of the new TSP model in water tariff collection. The same independent, dependent and control variables measured for the earlier models were considered here, but this time under the influence of the TSP.

Figure 4 .11 is a comparative presentation of total annual water bills for the three zones of Dalun studied before (2006) and after (2008) the TSP intervention. It shows that there was a high level of fluctuation in water bills in the year 2006 but remained fairly low towards the end of that year. 2006 had a total annual water bill of GH¢5,717.07 (¢ 57,170,700) while 2008 had GH¢ 5,909.83, the average monthly bills being GH¢476.425 (¢4, 764,250) and GH¢492.4858 for the two years respectively (Commercial unit, GWCL, Tamale).

Figure 4.11: Cumulative monthly Water bills for the year 2006 and 2008 (before and after TSP) for the three zones.



Source: Commercial unit-GWCL/AVRL-Tamale, 2009

Figure 4.11 also indicates that the month of April 2006 had the highest water bill of GH¢ 1,327 .69 while November that same year recorded the lowest of GH¢73, thus giving a wide range of GH¢1,254.69. On the average, water bills after the TSP intervention remained fairly uniform as the range was comparatively lower. The highest bill in 2008 was GH¢656.04 and the lowest was GH¢ 333.3, which yielded a range of GH¢ 322.74.

The disparities in the water bills before and after the TSP intervention owe their explahations to a number of factors. Firstly, before the intervention the tariff determination method was the IBT. Ignorance about the effects of wasting water at public standpipes (often by women and children washing clothing and playing respectively) on increasing water bills resulted into consumption levels being brought to the higher tariff bracket of the IBT. (See also Nkrumah, 2004). This makes nonsense of the provision for the lifeline consumption rate in the IBT and makes the billing system rather more regressive to the poor (Whittington, 1992). However, this aspect of the IBT according to Nkrumah (2004), has also been considered to be capable of influencing water conservation as it discourages wastage. Additionally the imperfection in the functioning of the water system due to technical faults and poor community participation in reporting and cost-sharing in system maintenance contributed to the fluctuations in the water bills in 2006. In particular, any leakages due to a fault in a service component after the water has passed through the meter leads to an increase in water bills if not attended to for a considerable period.

In 2008, however, the tariff determination method was by bargaining, which provided for the incorporation of the economic and socio-cultural backgrounds of the people into the adopted tariff rate by the TSP members. This in addition to improved water infrastructure, regularity of pipe flow and community participation in water conservation by rationing, kept the water bills relatively uniform in 2008 or after the TSP intervention. The relatively small proportionate increase of 9% in total water bills between 2006 and 2008 signifies the level of stability in the tariff rate over time, which Munasinghe (1992), considers as a necessary water pricing condition. This had a partial effect on promoting willingness to pay after the TSP intervention as tariff rates were kept under control. The above is an aggregate picture of the billing process in

Dalun. Table 4.15 facilitates a comparative examination of the trend in water bills in the three zones studied.

Table 4.15 Zonal water bills (in GH¢) before and after the TSP intervention (2006 and 2008)

Year	Zones			Total water bill
	Dalun Station	Dalun Nayili Fon	Dalun Kanbong Naa Fon	
2006	1,441.17	2,599.91	1,675.99	5,717.07
2008	1,617	2,180.75	1,959.92	5,909.83

Source: Commercial unit-GWCL/ AVRL- Tamale, 2009

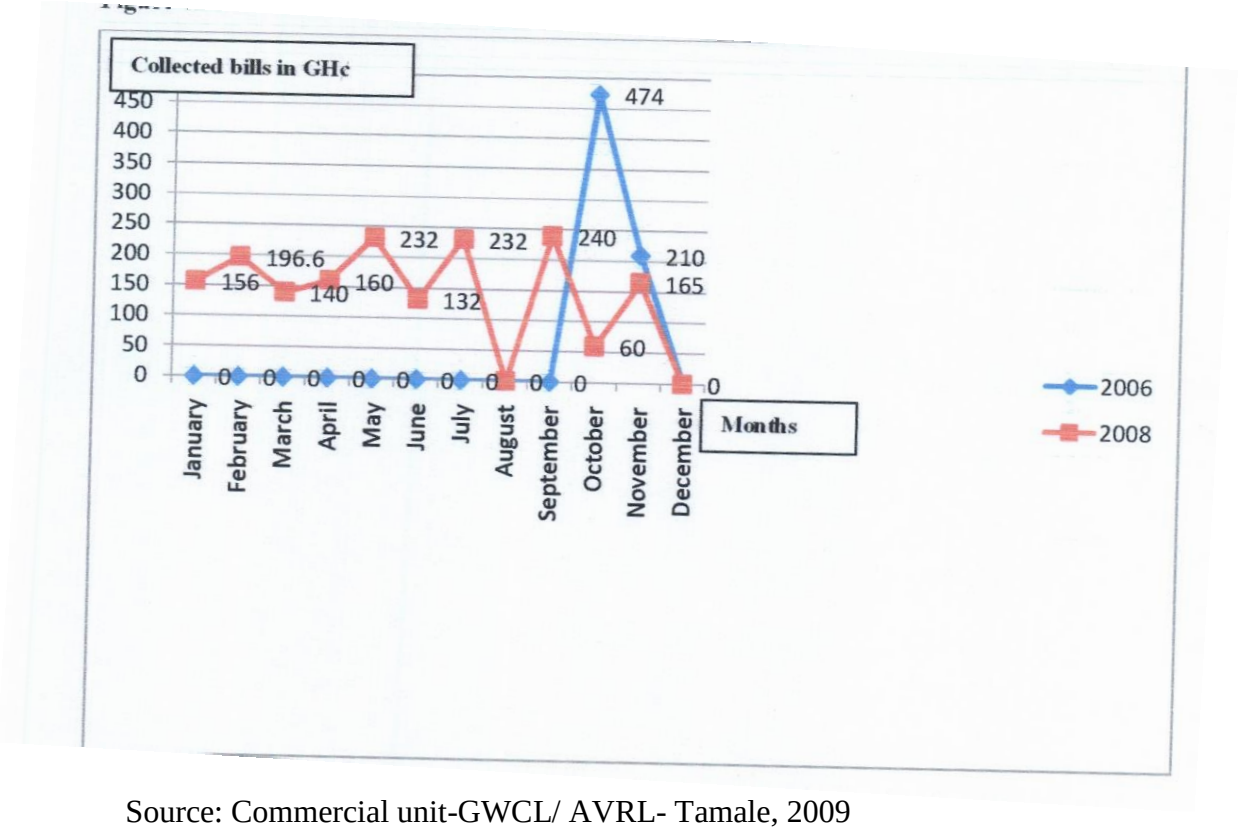
The data in Table 4.15 rather reveals an inverse relationship between customer population and water bills in relation to the standpipes in the three zones of Dalun. We saw in Table 3.2 that the number of houses per standpipe for the three zones were 50, 48 and 30 for Dalun Station, Dalun Kanbong Naa Fon and Dalun Nayili Fon respectively. This means Dalun Station is the largest, followed by Kanbong Naa Fon, with Nayili Fon being the smallest. Contrarily Nayili Fon has the highest water bills while Dalun Station has the lowest before and after the intervention. Key informant interview results with the SNV officer in charge of water projects, indicated that Dalun Nayili Fon always had 24 hours of metered water flow, because of the location of the stand pipe (close to the Chiefs Palace). Cases of technical faults were quickly attended to, as the facility was monitored by the GWCL station officers themselves in order to avoid inconveniences to the palace. The uninterrupted supply of water without rationing before the TSP accounted for higher meter readings and the associated higher water bills.

Apart from the problems associated with the condition of the water system before the TSP as discussed earlier, Dalun Station had flat tariff rates for the whole of 2008. This, according to the GWCL/ AVRL officials, was due to a faulty meter. The flat rate was relatively lower than the metered water tariffs for the other two zones, thus accounting for the lower bills for this zone. The apparent reduction in water bills for Dalun Nayili Fon after the intervention in 2008 compared to 2006 (from GH¢2,599.91 in 2006 to GH¢2,180.75 in 2008) was due to Water Board activities in the rationing of water supply.

After the institutionalization and capacity building of the Water Boards, and their subsequent control over the tariff collection process, it became possible to examine how effective the TSP has been in achieving its aim, by assessing the performance of the Water Boards in the collection of the water bills as discussed earlier. Figure 4.12 presents a comparative assessment of the Community Committee before the TSP intervention (2006) and the Water Boards after the TSP intervention (2008) in the collection of water tariffs in Dalun.

Of the total water bills of GH¢5,717.07 and GH¢5,909.83 for 2006 and 2008 respectively, see Table 4.15), a summation of the monthly credit balances or collected water bills in Figure 4.12 gives total bills of GH¢474 and GH¢1,713.6 for 2006 and 2008 respectively for the three zones. This means only about 8% of the total water bills for 2006 were collected compared to 29% for 2008 after the TSP intervention. This shows that the Water Boards of the TSP were about 72% more efficient than the Community Committees in terms of collected water bills, thus the positive correlation between effective community participation and WTP as discussed earlier.

Figure 4.12: Collected water bills before and after the TSP intervention in Dalun.



Source: Commercial unit-GWCL/ AVRL- Tamale, 2009

Figure 4.12 shows that between January and September 2006, the Community Committee could not collect any water bills from the people until October and November after which no tariffs were collected in December that year. In 2008, however, there was some level of progress in the tariff collection process since apart from August and December that year, no month recorded a zero credit balance. Figure 4.10 already presented the distinguished aspects of the Water Boards as observed by the respondents in the tariff collection process compared to previous regimes. It is equally important to discuss the progress in the tariff collection process at the zonal level.

Table 4.16 is another confirmation of improvement in the tariff collection process after the TSP period, and adds meaning to the significant relationship between service delivery model and WTP as discussed earlier, over the period before. However, Nayili Fon still maintains the highest level of unpaid bills due to the influence of the Chief in this zone as discussed previously. The success of the Water Board in reducing the tariff arrears in the same zone by the rationing of water supply has, however, also been accounted for.

Table 4.16: Collection of tariffs by the zonal Water Boards after the TSP intervention

Zone	Year	Debit (in GH¢)	Credit (in GH¢)	Percentage of tariffs collected
Dalun Station	2008	1,617	525	32.5%
Dalun Nayili Fon	2008	2,180.75	166	8%
Dalun Kanbong Naa Fon	2008	1,959.92	536.6	27%

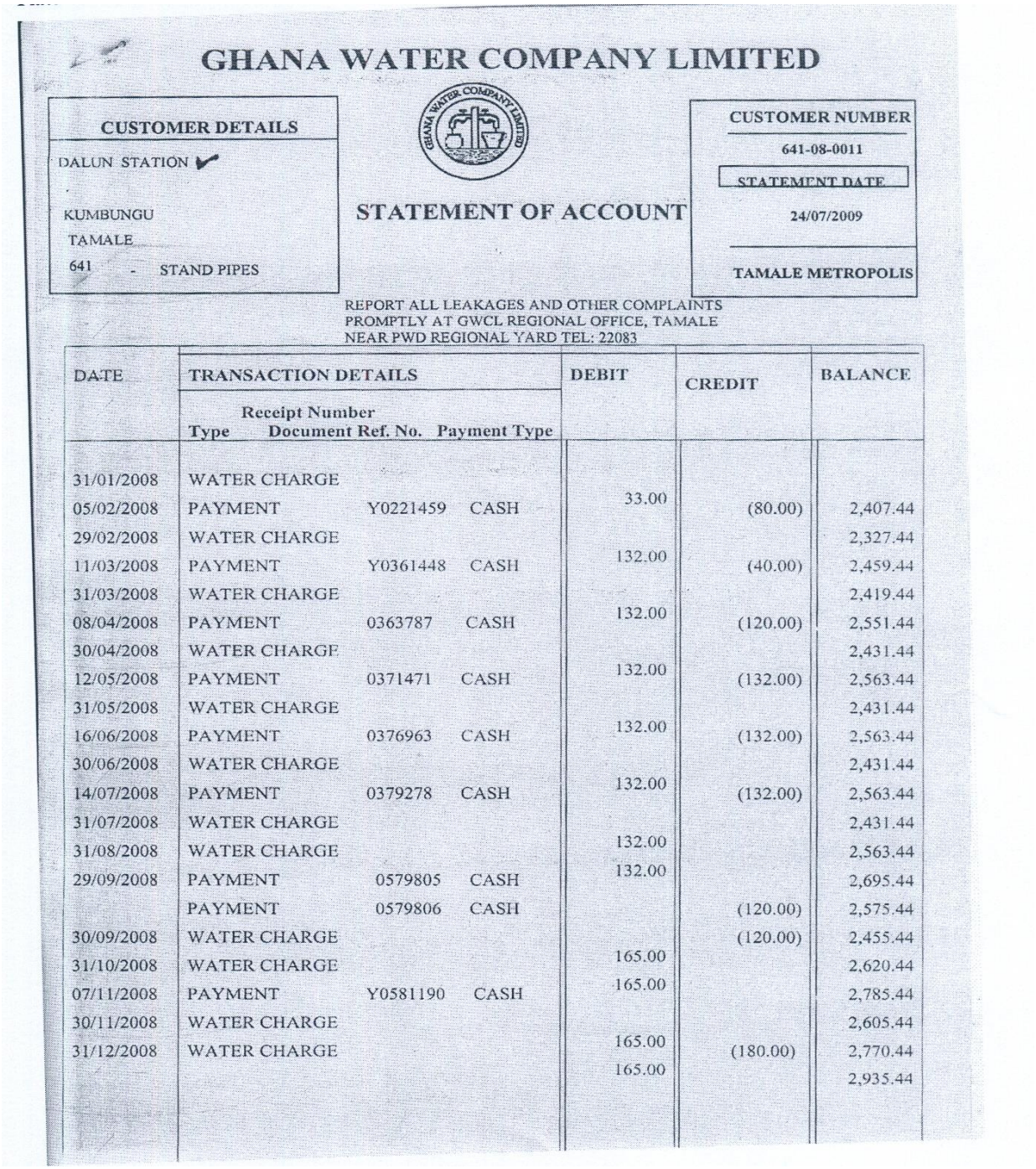
Source: Commercial unit-GWCL/ AVRL- Tamale, 2009

The fairly stable nature of tariff rates in Dalun station due to the faulty meter in addition to the instrumentality of its Water Board contributed to its ability to maintain a better performance over the others in 2008. This confirms the view of Munasinghe (1992), that relatively stable and affordable water tariff rates can promote WTP in pro-poor services. This is because users can always predict how much they would be paying at a given time (such as monthly) and prepare for it (Munasinghe, 1992). This also has the tendency to reduce social disorganization effects, while confidence in the billing process and reduction in possibilities of tariff evasion due to the improved tariff collection method also helped

greatly in improving the tariff collection situation. (See Byron and Robert, 1989; CJPR, 1999; Zibechi, 2008).

Plates 4.5, 4.6 and 4. 7 show sample pages of annual water bill statement for Dalun Station, Dalun Nayili Fon and Dalun Kanbong Naa Fon respectively, in the year 2008 or after the TSP intervention. One can observe some level of progress in the credit columns as the Water Boards were able to collect some tariffs and paid to the GWCL/AVRL, compared to 2006. Dalun Station had the best performance in the collection and payment of the water bills because apart from the factors expressed in the next section, it was also free from the influence of traditional authority. Dalun Nayili Fon experienced the least positive effects of the activities of the Water Boards in the tariff collection process for the same reasons expressed earlier. Plate 4.6 shows that this zone only increased the frequency of monthly payment of water bills by one month over the period before the intervention. FGD results with the mixed gender group confirmed that the situation was due to the influence of the chief, whose immediate family members hardly paid for public utility services such as water and electricity.

Plate 4.5: An annual statement of water bills covering the year 2008 for Dalun Station (after the TSP).



GHANA WATER COMPANY LIMITED

CUSTOMER DETAILS

DALUN STATION ✔

KUMBUNGU
TAMALE
641 - STAND PIPES

STATEMENT OF ACCOUNT

CUSTOMER NUMBER
641-08-0011

STATEMENT DATE
24/07/2009

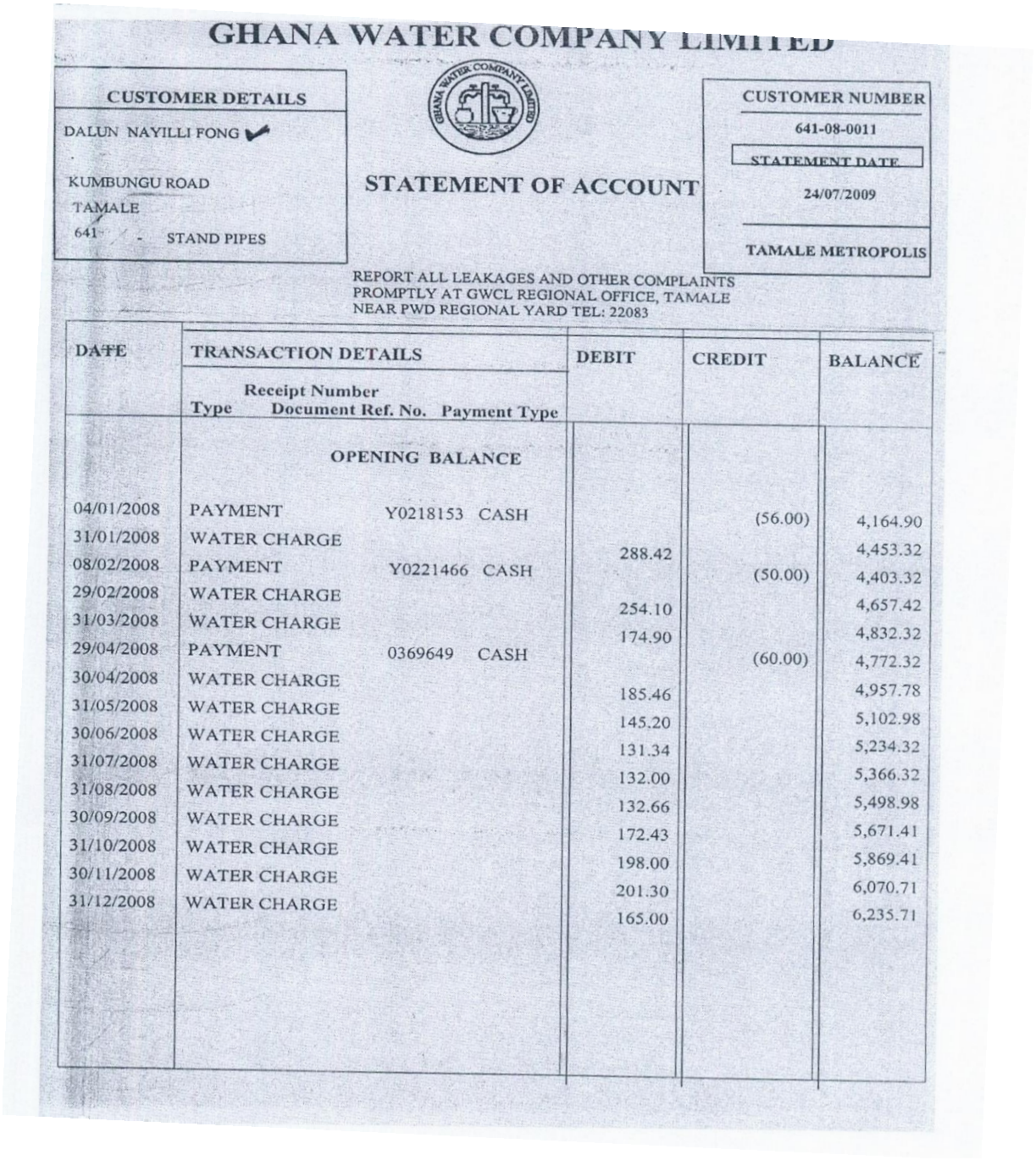
TAMALE METROPOLIS

REPORT ALL LEAKAGES AND OTHER COMPLAINTS
PROMPTLY AT GWCL REGIONAL OFFICE, TAMALE
NEAR PWD REGIONAL YARD TEL: 22083

DATE	TRANSACTION DETAILS			DEBIT	CREDIT	BALANCE
	Type	Receipt Number Document Ref. No.	Payment Type			
31/01/2008	WATER CHARGE			33.00		2,407.44
05/02/2008	PAYMENT	Y0221459	CASH		(80.00)	2,327.44
29/02/2008	WATER CHARGE			132.00		2,459.44
11/03/2008	PAYMENT	Y0361448	CASH		(40.00)	2,419.44
31/03/2008	WATER CHARGE			132.00		2,551.44
08/04/2008	PAYMENT	0363787	CASH		(120.00)	2,431.44
30/04/2008	WATER CHARGE			132.00		2,563.44
12/05/2008	PAYMENT	0371471	CASH		(132.00)	2,431.44
31/05/2008	WATER CHARGE			132.00		2,563.44
16/06/2008	PAYMENT	0376963	CASH		(132.00)	2,431.44
30/06/2008	WATER CHARGE			132.00		2,563.44
14/07/2008	PAYMENT	0379278	CASH		(132.00)	2,431.44
31/07/2008	WATER CHARGE			132.00		2,563.44
31/08/2008	WATER CHARGE			132.00		2,695.44
29/09/2008	PAYMENT	0579805	CASH		(120.00)	2,575.44
	PAYMENT	0579806	CASH		(120.00)	2,455.44
30/09/2008	WATER CHARGE			165.00		2,620.44
31/10/2008	WATER CHARGE			165.00		2,785.44
07/11/2008	PAYMENT	Y0581190	CASH			2,605.44
30/11/2008	WATER CHARGE			165.00		2,770.44
31/12/2008	WATER CHARGE			165.00	(180.00)	2,935.44

Source: Commercial Unit, GWCL- Tamale, 2009

Plate 4.6: Annual statement of water bills for Dalun Nayili Fon after the TSP intervention (2008)



GHANA WATER COMPANY LIMITED

CUSTOMER DETAILS	CUSTOMER NUMBER
DALUN NAYILLI FONG ✔	641-08-0011
KUMBUNGU ROAD	STATEMENT DATE
TAMALE	24/07/2009
641 - STAND PIPES	TAMALE METROPOLIS

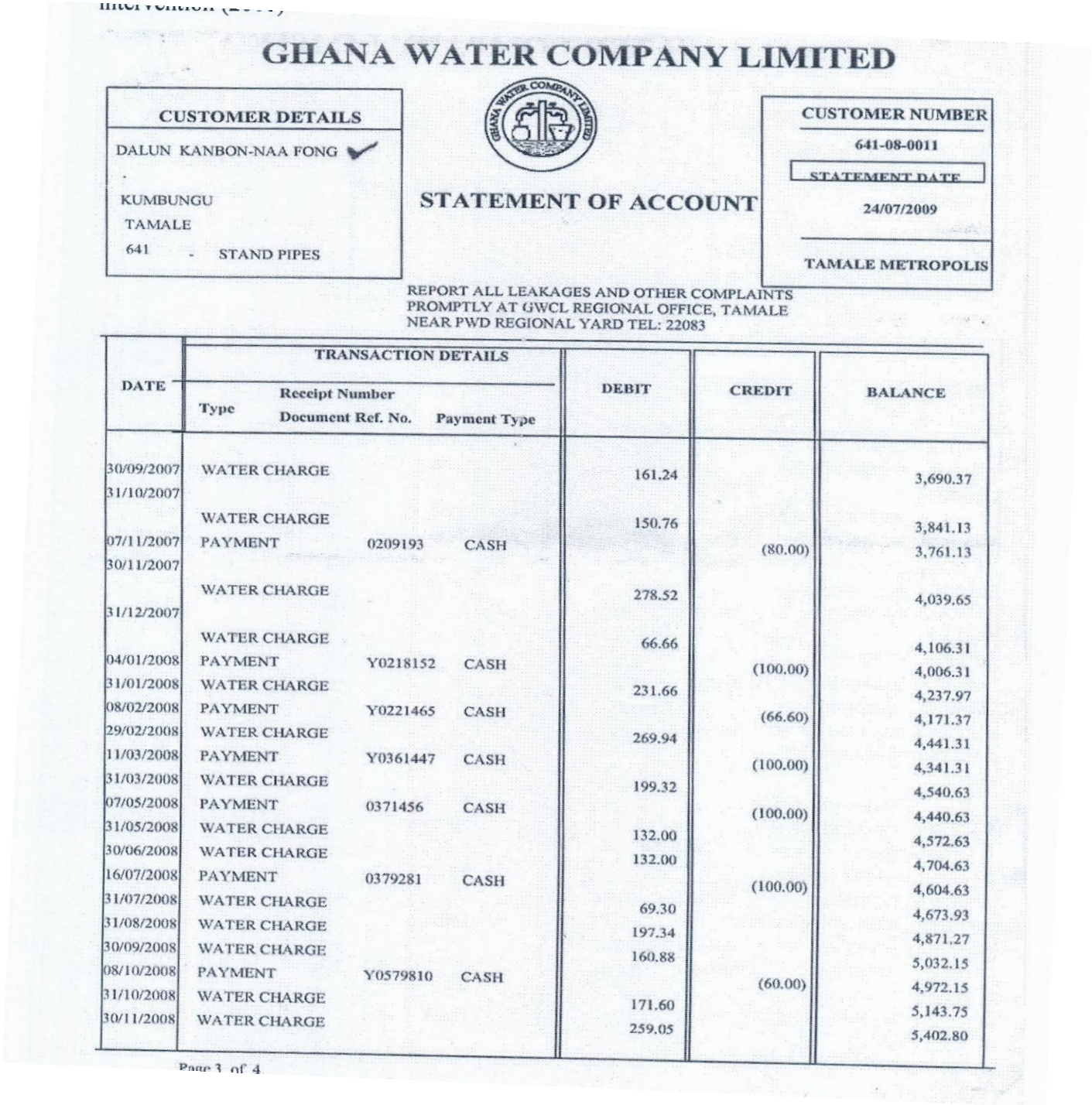
STATEMENT OF ACCOUNT

REPORT ALL LEAKAGES AND OTHER COMPLAINTS PROMPTLY AT GWCL REGIONAL OFFICE, TAMALE NEAR PWD REGIONAL YARD TEL: 22083

DATE	TRANSACTION DETAILS			DEBIT	CREDIT	BALANCE
	Type	Receipt Number Document Ref. No.	Payment Type			
	OPENING BALANCE					
04/01/2008	PAYMENT	Y0218153	CASH		(56.00)	4,164.90
31/01/2008	WATER CHARGE			288.42		4,453.32
08/02/2008	PAYMENT	Y0221466	CASH		(50.00)	4,403.32
29/02/2008	WATER CHARGE			254.10		4,657.42
31/03/2008	WATER CHARGE			174.90		4,832.32
29/04/2008	PAYMENT	0369649	CASH		(60.00)	4,772.32
30/04/2008	WATER CHARGE			185.46		4,957.78
31/05/2008	WATER CHARGE			145.20		5,102.98
30/06/2008	WATER CHARGE			131.34		5,234.32
31/07/2008	WATER CHARGE			132.00		5,366.32
31/08/2008	WATER CHARGE			132.66		5,498.98
30/09/2008	WATER CHARGE			172.43		5,671.41
31/10/2008	WATER CHARGE			198.00		5,869.41
30/11/2008	WATER CHARGE			201.30		6,070.71
31/12/2008	WATER CHARGE			165.00		6,235.71

Source: Commercial Unit, GWCL- Tamale, 2009

Plate 4.7: Annual statement of water bills for Dalun Kanbong Naa Fon after the TSP intervention (2008)



GHANA WATER COMPANY LIMITED

CUSTOMER DETAILS

DALUN KANBON-NAA FONG

KUMBUNGU

TAMALE

641 - STAND PIPES

STATEMENT OF ACCOUNT

CUSTOMER NUMBER

641-08-0011

STATEMENT DATE

24/07/2009

TAMALE METROPOLIS

REPORT ALL LEAKAGES AND OTHER COMPLAINTS PROMPTLY AT GWCL REGIONAL OFFICE, TAMALE NEAR PWD REGIONAL YARD TEL: 22083

DATE	TRANSACTION DETAILS			DEBIT	CREDIT	BALANCE
	Type	Receipt Number / Document Ref. No.	Payment Type			
30/09/2007	WATER CHARGE			161.24		3,690.37
31/10/2007	WATER CHARGE			150.76		3,841.13
07/11/2007	PAYMENT	0209193	CASH		(80.00)	3,761.13
30/11/2007	WATER CHARGE			278.52		4,039.65
31/12/2007	WATER CHARGE			66.66		4,106.31
04/01/2008	PAYMENT	Y0218152	CASH		(100.00)	4,006.31
31/01/2008	WATER CHARGE			231.66		4,237.97
08/02/2008	PAYMENT	Y0221465	CASH		(66.60)	4,171.37
29/02/2008	WATER CHARGE			269.94		4,441.31
11/03/2008	PAYMENT	Y0361447	CASH		(100.00)	4,341.31
31/03/2008	WATER CHARGE			199.32		4,540.63
07/05/2008	PAYMENT	0371456	CASH		(100.00)	4,440.63
31/05/2008	WATER CHARGE			132.00		4,572.63
30/06/2008	WATER CHARGE			132.00		4,704.63
16/07/2008	PAYMENT	0379281	CASH		(100.00)	4,604.63
31/07/2008	WATER CHARGE			69.30		4,673.93
31/08/2008	WATER CHARGE			197.34		4,871.27
30/09/2008	WATER CHARGE			160.88		5,032.15
08/10/2008	PAYMENT	Y0579810	CASH		(60.00)	4,972.15
31/10/2008	WATER CHARGE			171.60		5,143.75
30/11/2008	WATER CHARGE			259.05		5,402.80

Page 3 of 4

Source: Commercial Unit, GWCL- Tamale, 2009

Generally, however, the data on collected water tariffs confirm the favourable statistical significance of 0.006 at a positive contingency coefficient of 0.484 (48.4%) about the relationship between the type of service model and collected water bills as seen earlier.

Table 4.17 in the next section expresses respondents' observations on the factors that influenced the improved performance of the Water Boards in the tariff collection process.

4. 7 .*2* Factors that accounted for the tariff situation after the TSP

Table 4.17: Contributory factors to the tariff situation after the TSP period

	Factors						Total	
Community	Reduction in tariff evasion	Increased confidence in the billing process	Commission for dedicated work	Improved participation	1,2,4	1,2	Number	Percent
Dalun Station	1	12	1	15	1	0	30	37.5%
Dalun Nayili Fon	4	4	0	13	0	1	22	27.5%
Dalun Kanbong Naa Fon	0	6	0	22	0	0	28	35%
Total	5	22	1	50	1	1	80	100

Source: This study, 2011

Commission for dedicated work received a low response rate of one (1), because the condition for the commission was hardly attainable: the Water Board was to collect and fake 100% payment of a monthly water bill to the GWCL/ AVRL before the agreed commission of 20% could be paid. The results confirm that this condition is far from being achieved. This is consistent with the findings of JICA (1997), that in the Philippines, the cost-revenue gap of

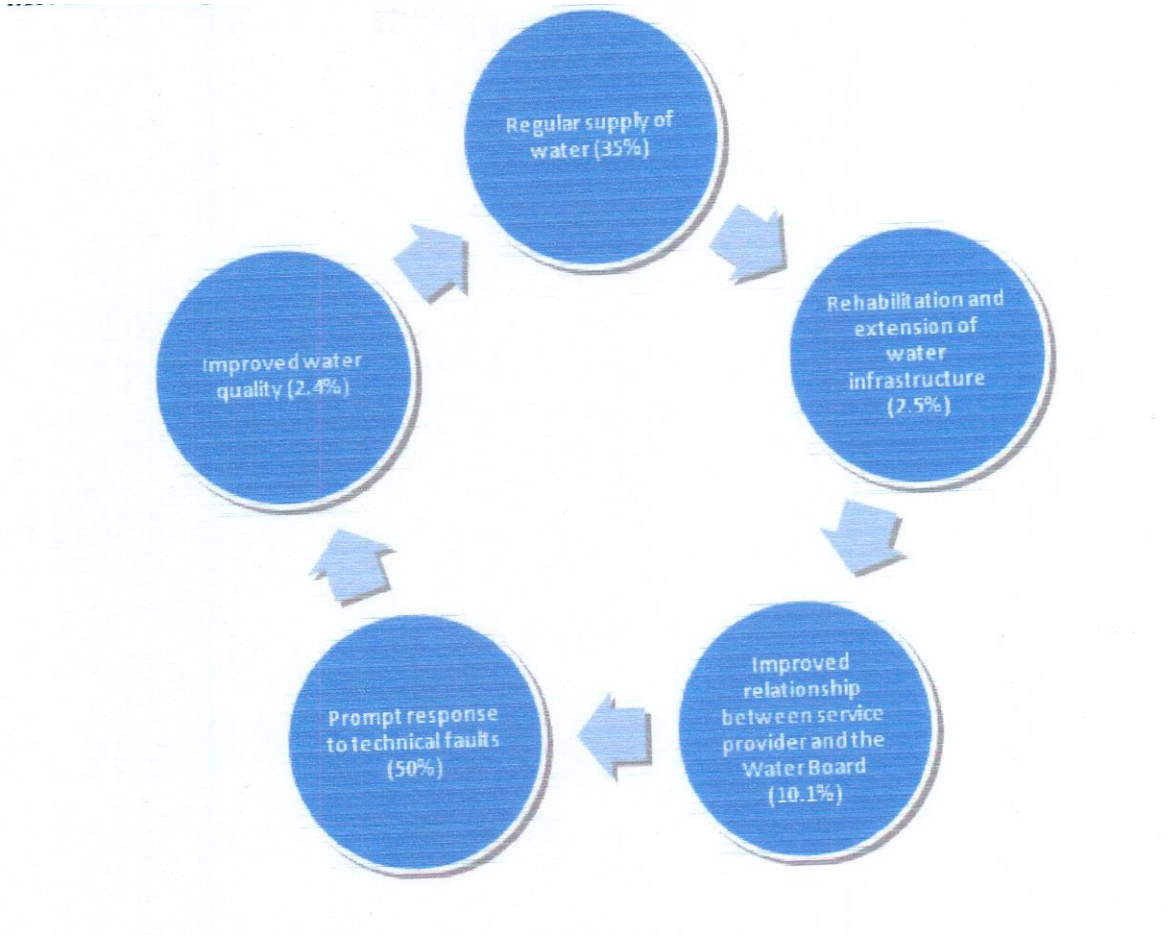
extending piped water to the poor rural areas was so high that, the state iniated a freeze on tariff hikes to the dissatisfaction of the private sector partners. In fact, water revenue often failed to reach 20% of total supply cost in such areas. This is due to the technology/cost and beneficiary economic threshold mismatch (Abrams, 2000/2001). In other words, the technology for the water services in the area is a high-cost technology primarily meant for the metropolitan population (Tamale). However, in many rural areas the only feasible, affordable option for water sanitation services are small, localized schemes which are best operated and maintained at the local level of the scheme (Abrams, 2000/2001).

On the contrary, the situation in the Dalun community and others along the Daun-Tamale Corridor (see plates 3.1 and 3.2- chapter 3), could be described as a technological imposition rather than by choice as a benefit for the use of their environmental resource- the Nawuni dam in the Dalun area as the main intake source of water for the GWCL in Tamale (SNV, 2008). The Water Boards, however, accused the GWCL/AVRL for failing to fulfill this important aspect of the agreement (payment of commissions) during a focus group discussion. Community participation encapsulates all the other factors, and this thesis has already established statistically that it has a positive correlation with WTP. The sixth and seventh columns of Table 4.17 contain multiple responses, the numerals representing the order of arrangement of the factors beginning from the second column.

4.7.3 Effects of the change in the tariff situation after the TSP

Apart from section 4.0.2 which was about the conditions of water supply in Dalun, which constitutes the main interest of the beneficiary community, the rest of the sections have been looking at how well or how bad the service provider's interest in terms of water revenue generation was fairing in various service models. The discussion in this section is focused on how the participatory framework for effective capacity building at the local community level ensures sustainable water supply in the interest of the local people (Abrams, 2000/2001). Figure 4.13 presents respondents' perceptions of the effects of improved water tariff collection and payment on service quality.

Figure 4.13: Effeds of improved tariff collection by the Water Boards after the TSP intervention



Source: This study, 2011

The implications of improved tariff collection and payment to the GWCL/AVRL appear to fulfill the service quality consumers expected from the intervention (R *), which is reflective of the cyclical relationship between the factors presented in Figure 4.13. The rehabilitation and extension of water infrastructure has received a low response rate of 2.5% because that aspect was achieved before the TSP was initiated in Dalun, but was a necessary condition to promote willingness to pay among the service users. (See Whittington *et al,* 1991). In other words, by the beginning of 2007, Biwater Ltd. had completed the Tamale Water Optimization Project (TWOP) which was extended to Dalun.

It could be recalled from the introductory part of this thesis that it was in view of the high cost of the TWOP, that the issue of pro-poor services came up as donor conditionality, in order to

ensure positive attitudes towards payment for services for win-win effects (Botchwey, 2006). This is because no private operators will invest in business unless it is more profitable than other investment opportunities, and if external funds are raised then the project must be more profitable than the cost of fund procurement (JICA, 1997). Accordingly, the establishment and capacity building of the community Water Boards to be the intermediaries between the communities and the public-private sector partners of the TSP, were to facilitate a framework that would be realistic and appropriate to the circumstances in which both local people and the public-private partners function on the ground, by the development of a threshold with an absorptive capacity for the ultimate goal of the project (Abrams, 2000/2001). However, the missing link in the TSP was the failure to answer the question of improving the economic capacities of the beneficiary communities to be capable of paying for services at rates commensurate with the existing technology cost.

The discussions in the previous sections have shown the effects of the improved relationship between the Water Boards and the service provider on water tariff management. This awareness received a response rate of 10.5%. This does not mean an insignificant role of the Water Boards. Rather, the local people attach more importance to what resulted from their activities hence the high response rates for prompt attendance to technical faults (50%) and regular supply of water (35%). The issue of water quality also received the lowest response rate of 2.4% because the area was already benefiting from treated pipe-borne water before the TSP intervention. They, however, believe that effective payment of tariffs through improved community participation has contributed to general service quality, including water quality and regular supply as an achievement of social action and citizen control for the reduction of water poverty. (See Rothman, 1968; Arnstein, 1969; Castro, 2005).

Having brought the assessment of the TSP model in pro-poor water tariff collection fo this level, the rest of the work involving the observed challenges and the way forward after the TSP experience have been looked at in the summary and concluding chapter.

CHAPTER 5: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter is the summary of the major issues raised in the discussions chapter. It starts with the background of the respondents and how this influenced the performance of the TSP model. The chapter then highlights on how the study addressed the research questions and objectives. A conclusion was drawn on the situation of water tariff collection before and after the TSP model. Since this chapter is a presentation of the researcher's personal review of the results of the study already discussed in the previous chapter, seconadry data has been avoided, except in the special recommendations section; where there was the need to verify the validity of some policy decisions expressed by the researcher.

5.1 Summary of Major Findings

This section expresses the major findings of the study by beginning from the profile of the respodents and also indicated how the study addressed the research questions and objectives.

5.1.1 The relationship between the socio-economic characteristics of Dalun and water use behaviour

The Dalun community, which is located about 30km to the south-western corner ofTamale and in the Tolon/Kumbungu District of the Northern Region of Ghana, and also constitutes a terminal of the Dalun-Tamale corridor comprising an identified group of communities through which the main water distribution pipeline for the GWCL passes (from Dalun to Tamale), was examined in the contexts of an earlier PPP model (without a legally incorporated community participation) and a Tri-sector Partnership Model of pro-poor Water Delivery Services which was a component of the Tamale Water Optimization Project (TWOP) as a donor conditionality. Socio-economically, the community was found to be male- dominant in terms of household decision-making on basic needs with a focus on potable water. Women however formed a significant proportion of the household decision makers as they made up (39%) of the heads.

It was revealed that women were more sensitive to the changes brought about by the improvement in service quality and the activities of the Water Boards under the TSP model, and accordingly responded better to the new water tariff collection process by being more willing to pay than the men. Community participation in the TSP activities, however, varied with age, with the younger age groups being more involved than the aged. The large average household size of 7 and the higher rate of marriages (close to 79%) account for high level of water use in the area. However, given the lower average household monthly income of GH¢ 55.2 compared to the national average of GH¢ 101.42, and with over 52% of the population falling in the low income stratum, the ability to pay for water and hence the effectiveness of the tariff collection process was generally poor before the TSP intervention. This is because a greater proportion of 52% of the people are engaged in food crop farming, while an alarming proportion of 74% are illiterates.

On the average, however, there was an insignificant (weak) positive relationship between income levels and willingness to pay for water before and after the TSP intervention in Dalun. After the TSP period, Dalun Station which had the greatest improvement in the collected water bills recorded an inverse relationship between income level and willingness to pay, Dalun Nayili Fon showed no relationship between household income and willingness to pay and Dalun Kanbong Naa Fon also had an insignificant positive relationship between income and willingness to pay. This means the TSP pro-poor water delivery model was successful in stimulating the poor to pay for water, since the proportion of those in the low income group were willing to pay more than those in the middle and high income groups.

5.1.2: The situation of the water system and the effects on willingness to pay

The situation of potable water supply in the community was found to be generally not bad before and after the TSP intervention. Over 91 % of the people depend on public standpipes as the main source of good drinking water, which is characteristic of pro-poor community water services. Other sources of water in the community include the private household pipe connections, domestic household hand-dug wells and an insignificant use of public boreholes. The White Volta River and the Nawuni dam also serve as sources of water for building and livestock rearing. The dam at Nawuni (near Dalun) is also the main intake source of water for the GWCL/ AVRL, which is treated at Dalun before distribution.

Before the TSP intervention problems of leakages and technical break-downs due to the old and rusty nature of the water infrastructure set-up, as well as poor detection, reporting and delayed response to these problems affected the service quality, and contributed to the low level of willingness to pay for water services. The implementation of the TWOP between 2006 and 2007 led to the rehabilitation of the water system by Biwater Ltd., while the formation of the TSP and the improved association between the Water Boards and the service provider (GWCL/AVRL) brought about improved efficiency and upgraded service quality to the satisfaction of the water users, which accordingly induced positive attitudes towards water use and willingness to pay.

5.1.3 Revisiting the Research Questions and Objectives

This section presents the specific findings of the study that provided answers for the research questions or measured the level of achievement of the research objectives (see sections 1.2.1 and 1.2.2).

5.1.4 Earlier models of water services

This section tackles the first objective and research question of the study. The study revealed that before the TSP intervention, the people of Dalun were familiar with water delivery as Public Ownership and Operation (POO); which was typical of the public sector dominated water services under the former GWSC before the privatization of water in Ghana and the Public-Private Partnership (PPP) which has taken the form of Public Ownership and Private Operation (POPO) under the management contract between the GWCL and AVRL. These models did not have well-planned pro-poor rhetoric in water services. It was however statistically proven that there was some significant relationship between service delivery model and the tariff collection process or willingness to pay for water, with a contingency coefficient close to 0.48 (48%) at 0.003 significant level, implying that an effective service delivery model could have positive effects on the collection and payment of water bills. During this period it was the Community Committee that worked with the GWCL/ AVRL in water revenue management. The committee was however not established by the GWCL, nor was it specifically for water issues, neither was there any legal relationship between the committee and the service provider. These in addition to the lack of capacity building programmes for the committee for effective community participation affected the efficiency of the service delivery models before

the TSP in water tariff collection. This community structure was however recognized and played a useful role through information giving and consultation during the community entry stage for the initiation of the TSP intervention by the Public-private partners of this new model.

5.1.5 The performance of the earlier models of water services in tariff collection

This section is focused on the second objective and research question. The assessment of the earlier models in the water tariff collection process was multi-factorial. The lack of formal partnership between the local level and the service provider or the PPP (GWCL/AVRL); the complete absence of efforts for threshold assessment of the beneficiaries in terms of absorptive capacity for the technology used in relation to income levels, pricing policy and local management skills; the lack of consideration for capacity building and motivation of the local participants; limited efforts at awareness creation; and relatively poorer service quality, in addition to the high level of poverty and corruption in the handling of the collected water bills, impacted negatively on the willingness to pay and tariff collection process.

It was also statistically proven that there was a negative partial correlation coefficient of -0.185 (18.5%) significant at 0.103 when the activities of the committee were introduced as a control variable over the zones of Dalun and willingness to pay. Without the committee activities, the Bivariate correlation coefficient was -0.28 (28%) significant at 0.012. The reducing negative coefficients under the influence of community participation mean that participation has the tendency to improve upon the situation. As a result of the factors expressed above there was a high proportion of 92% of water bills in arrears before the TSP period (2006), in other words the committee could only collect about 8% (GH¢ 474) of the total water bills (GH¢5,717) for the year 2006.

The most common adoptive strategy for defaults in the payment of the water tariffs was by reporting offenders to the chief. Others included committee arbitration and the termination of services by the GWCL (which was rare). As a last resort, the TKDA could subsidize water bills, but this was hardly done.

5.1.6 Factors that accounted for the formation of the TSP in pro-poor water tariff management

The purpose of this section is to furnish the third objective and research question. The poor situation of water tariff collection under the earlier models among other factors influenced the formation of the TSP for the management of pro-poor water services in the Dalun-Tamale Corridor, with emphasis on water tariff management at Dalun in this thesis.

Under the initiative of the donor for the TWOP-Viten Rand Water Services BV of The Netherlands, the TSP was instituted as a component of the TWOP. The TSP was to ensure the proper functioning of the water system, provide adequate and regular supply of clean potable water to the poor, facilitate the formal incorporation of community participation with the capacity building of community structures for participatory decision-makin and the management of the water system in terms of maintenance, reporting of technical faults and effective water tariff collection for project sustainability. This necessitated role sharing among the TSP partners, with the public sector (GWCL/AVRL) being responsible for issues of physical infrastructure and water supply; the private sector (SNV and POI) was responsible for the formation and capacity building of the community Water Boards; while the Water Boards took control over issues of maintenance and tariff collection.

With these and other conditions such as commissions for Water Board members for collected water tariffs, a Tri-sector Partnership agreement document was signed in February 2007, during which period the implementation phases began, and by 2008 there was the exit of the private sector organizations (SNV and POI) and the Water Boards took control over the water tariff management among other responsibilities, with the aim of improving the tariff collection process to meet at least, the operational cost of providing water to the people in view of the heavy investment in the TWOP.

5.1.7 The pro-poor water tariff collection process

This section caters for the fifth objective and the associated research question. The distinguished features of the Water Boards of the TSP in the Tariff management process included participation in water tariff determination, meter reading for the estimation of current water bills, improved

record keeping, a change from house-to-house collection of water bills to collection at standpipes and most recently, the gradual introduction of cash-and-carry instead of monthly payment of water bills. These factors contributed to increased trust and confidence in the billing process with the associated increase in the willingness to pay by the local public standpipe users. This brought about improved tariff collection by the Water Boards compared to the regime of the Community Committee. However the dominance of the GWCL in terms of its close association with the Board or the community as the case has always been, made the ordinary people services were still public sector dominated and so expected lower tariffs rates or no payment at all.

5.1.8 Achievements of the TSP model in water tariff collection

This section answers the fifth research question for the measurement of the achievement of the fifth objective. Of the total amount of water bills for the year 2008, which was GH¢5,909.83 (after the TSP intervention), the Water Board collected 29% (GH¢1,713.6) compared to 8% (GH¢474) for 2006 (before the TSP intervention). Thus, 71% of water bills remained in arrears after the intervention compared to 92% before the TSP. Apart from the proportion of water tariffs collected, there was a general improvement in the frequency of payment of monthly water bills after the TSP intervention over the period before: the Community Committee was able to collect only 2 months out of 12 of the monthly water bills for 2006 in all the three zones. After the TSP intervention however, the new Water Boards increased the frequencies to 9, 3 and 6 months out of 12 for Dalun Station, Dalun Nayili Fon and Dalun Kanbong Naa Fon respectively. It is apparent from this data that the TSP model performed better than previous models in water tariff collection in Dalun. This proves that public-private partnerships in pro-poor water services are able to implement programmes and projects that incorporate local volunteerism and the socio-economic background of the poor into the tariff rate setting and billing processes and so promote the willingness and ability to pay.

Grossly however, the performance of the TSP in water revenue generation in Dalun still leaves much to be desired because, the 71 % of bills in arrears is still too high or the 29% of collected bills is too low, since it could not cover up to half of the total bills. If the operational cost of providing services to the Dalun community alone could be accessed, it is would have been

doubtful if the 29% of collected bills could meet that requirement to justify continued services. But Dalun only experiences the extension of a service intended for the metropolis (Tamale).

Thus, the managerial efforts of private operators alone may not suffice to ensure the profitability of public services provided. This issue is known as the *real access gap*. In this case, the goal may only be achieved with government subsidies, but the private operators are expected to make their best possible efforts to cut costs even when benefiting from the subsidies. In many cases, subsidy payments are combined with monitoring of the extent to which the targets predefined in the contract are achieved. The TSP in Dalun attempted these but failed to adequately implement them as discussed in the next section. However comparing the Dalun TSP achievement to the situation in the rural areas of Chile, where the cost of water pipe connection work was so high that charge fees failed to reach 20% of the total cost, the 29% of collected water tariffs at Dalun could not be considered as a failure.

There is, however, the need to examine the gaps in the model as implemented in Dalun in order to determine the way forward.

5.1.9 Gaps in the TSP Pro-poor Water Service Model as Implemented in Dalun

Institutionally, in pro-poor service delivery partnerships, it is appropriate to involve local private sector development institutions that are familiar with the local conditions of the beneficiaries and are readily available at all levels of the project implementation, monitoring and evaluation. Though SNV and POI as the private sector organizations of the TSP satisfied this condition, POI in particular did not make any follow-ups after the establishment and capacity building of the Water Boards. Also SNV as the over-arching organization for the implementation of the TSP model carried out post-intervention assessment research by internship assignmehts to local students, but it failed to see to the commitment of the other parties to the agreement of the partnership by implementing the joint monitoring component of the TSP. Accordingly, the partners could not hold each other accountable for their actions or inactions. Hence, the GWCL/AVRL did not adequately facilitate their training programmes on meter reading and system maintenance.

Also, commissions to Water Board members have not been paid on the grounds that the boards are unable to meet the other condition of 100% of water bill collection. This is not only de-motivating, but could also stimulate social altruism effects within the Water Boards, which could tempt them to misappropriate collected water bills (and they actually do as results indicated), since the monitoring system to hold Water Board members accountable for the level of tariffs collected was not practiced. Officials of the GWCL however admitted that the failure to fully implement some aspects of the partnership was due to lack of funds ear-marked for those purposes. SNV also added that the short duration of the presence of the private sector for adequate monitoring was also due to the limited funds provided for the TSP component of the TWOP by Viten Rand Water Services BV of The Netherlands or the donor, through Biwater Ltd.

In terms of the nature of community participation in the TSP, FGD results with the Water Boards indicated that the decisions of the boards were not often recognized by the public-private sector partners. Ideas and agreements were often imposed on them; a situation that could be described as pseudo participation. For instance, the tariff rate of 2Gp per 18 liters of water was proposed by the GWCL/ AVRL for bargaining, and though the project officer of AVRL reported that the Umbrella Water Board opted for a reduction, the 2Gp remained at the end of the day. Additionally, the TSP came to inherit an existing water supply technology that was established by the original non-profit oriented public sector GWSC since the 1970s. The TSP partners however failed to re-assess the technology- cost and beneficiary absorptive capacity in view of the additional cost of rehabilitation to an already expensive technology to the poor. No efforts were made to explore alternative technologies which could have been cheaper for pro-poor services, and to create the opportunity for the poor to make their choice on affordability in terms of the cost/price relationship, thus negatively impacting on project sustainability as beneficiaries fail to adequately withstand the associated high tariff rates. This meant the lack of local democracy in the TSP, which is an element for a pro-poor service framework. The study also revealed that some of the zonal Water Boards were not well composed as they lacked technical men such as plumbers. This in addition to the inadequate commitment to train board members on system maintenance made the board still more dependent on the service provider for minor break-downs, thus affecting the sustainability of the water system at the local level. It was also observed that there were no deliberate efforts at

ensuring gender balance in the composition of the Water Boards, as they were found to be dominated by men. Women use water more for their reproductive activities and so can make better decisions to ensure transparency and accountability for improved quality of services. The lack of gender balance in participatory management of water services can therefore affect the sustainability of a water project.

Tehoretically, by comparing the various models of participation reviewed in this thesis, one could say that the consultants for the framing and implementation of the TSP model in Dalun did a splendid job. However, one other important gap was the inability to encapsulate a broader focus through an extended collaborative network with different types of private companies and the public sector to share the project risks. This gap accounted for the bottlenecks caused by the lack of funds to fully execute some aspects of the project tasks, apart from the inability to source funds to wipe out the huge 71 % of water bill arrears in Dalun after the TSP intervention. For instance, in some South American projects, various types of water business operators, including former public companies, private companies that have independently handled water supply operation and joint ventures set up by local governments and the private sector share risks with the government, local water supply public corporations and other actors in the public sector to operate PPP-based services focused on providing the poor with access to running water. Also the Dalun TSP was of a shorter duration (1 year), which could prevent the full realization of the advantages of a typical TSP model.

With this critical assessment of the strengths and weaknesses of the TSP model in pro-poor water tariff collection at Dalun, it is enough to establish a way forward after the TSP experience,

5.2: Conclusions

The realization of the failure of public sector dominance in basic utility services such as water brought about the adoption of capitalist or neoliberal democratic policies, leading to the privatization of such services in Ghana and other developing countries in the early 1990s. However, given the socio-economic characteristics of rural north Ghana; greatly impacted by subsistence agriculture, high incidence of poverty and traditionality, the earlier models of water

services associated with privatization could not yield the expected results in this zone, with water tariff arrears still amounting to over 80% .

By revisiting the major research question and objective, this study has revealed that the Public-private Partnership model that emerged earlier failed to formally incorporate local level democracy into the management of the water system, and the increased pressure to pay for water bills as a feature of private sector participation was initially unmatched by the service quality, given the old and rusty nature of the existing infrastructure and poor response to technical faults. Accordingly, there was a much greater gap between supply and revenue in a society like Dalun, that does not only fall under the category described above, but also sees the main source of water for the service provider as their environmental resource, with the effect that water tariff arrears could amount to 92% before the rehabilitation of the water system and the incorporation of local democracy into the management of water tariffs. Specifically, the earlier PPP model failed because of poor service quality, high level of poverty, traditionality, lack of authentic community participation, misappropriation of paid water bills and lack of trust in the billing process.

The change from the earlier Public-Private Partnership model (PPP) to the new Tri-sector Partnership model (TSP) did not affect the original institutional machinery of water supply. It was an intensification of economic liberalism by the extension of the democratic process in water sector management to the low income public water users, with emphasis on the effectiveness in water tariff collection through participatory decision-making involving tariff rate determination, maintenance of the water system and the regulation of water supply to reduce waste.

The Water Boards that represented the community in the TSP also had the autonomy to collect and distribute water bills to public standpipe users and enforce payment from the people. These in addition to their legal recognition as partners of the TSP and comprehensive capacity building programmes made the Water Boards different from the Community Committees which was justified by the ability of the former to reduce the water bill arrears to 71 % after the TSP (compared to 92% before the TSP), or were able to collect 29% of total water bills after the TSP (compared to only 8% before the TSP) .

The change from Public-Private Participation in water delivery to a Tri-Sector Partnership model therefore affected pro-poor water tariff management positively, as the TSP model was about 72% more efficient than the PPP model (based on the collected tariff figures). The added benefit of improvement in service quality in the TSP regime, made the study to conclude, that when tri-sector partnerships succeed communities benefit, governments serve more effectively and private enterprise profits.

However, the major gap in the TSP model as implemented in Dalun was the inability to incorporate risk management into the partnership by the application of multi-pronged approaches to the reduction of water poverty. Also there was a high-cost technological imposition on the target beneficiaries which rendered the pro-poor orientation of the TSP model in Dalun questionable. This study therefore attempted to fill this gap by proposing the Multi-factorial Pro-poor Community Water Service Model, which does not only provide for tariff risk management and a multi-factorial approach to water poverty reduction, but is also well defined to reduce ambiguity in application.

5.3: Recommendations

This section is an expression of the researcher's contributions to how some identified challenges could be addressed through policy review, not only for improved pro-poor water tariff collection, but also for the reduction of water poverty rural communities.

5.3.1 Socio-economic considerations

The feminine nature of the population of Dalun (50.90 females compared to 49.10 males) necessitates gender balance in all aspects of participatory decision for sustainability. It is therefore important to include women especially in the Water Boards, since water in traditional African communities is more of a feminine issue.

The high level of illiteracy in the area (74%) requires extensive public education for the effectuation of any innovation or change by overcoming the conservative nature of such a society. This could be through awareness creation at community fora.

Additionally, given the high level of poverty in the area, the mere inclusion of community participation with capacity building for water tariff management was inadequate. For the project to be aimed at the reduction of water poverty, there is the need to consider other projects that

could improve upon the economic empowerment of the people at the existing high-cost technology for water supply in Dalun, otherwise there could be project failure due to income/technology cost mismatch.

5.3.2 Improving the relationship between the situation of the water system and willingness to pay

Though the TWOP project led to the improvement of the water system in Dalun, the original technology was inappropriate for low income communities, because it was meant for urban high and middle income population, but was extended to the community because of its proximity to the source of water for the GWCL and as a strategy to reduce illegal connections. This awareness by the originators of the policy perhaps accounted for the relatively free services under the typical Public Ownership and Operation (POPO) in the period of the GWSC. Howeve since the PPP initially did not include pro-poor rhetoric, management sought to emphasize on payment for services as a characteristic of private sector participation.

The proportion of 91 % of the population of Dalun depending on the existing high-cost technology meant that the implications of the poor revenue generations due to the problem of affordability had far reaching effects. Given that the best pro-poor tariff structure has not yet been reached in the face of the 71% tariff arrears after the TSP intervention in Dalun, altemative strategies such as technological diversification that reduces cost, increases affordability and promotes willingness to pay, and Pareto optimality are necessary, otherwise it would be difficult to achieve tariff recovery levels beyond the 29%.

5.3.3 Addressing the gaps in TSP model of pro-poor water services in tariff eollection

The issues of poverty reduction, gender balance and technological consistency have already been discussed in the previous sections of the recommendations as some of the alternatives for checking some imbalances in the TSP model. It was also observed that the one year duration of the TSP model was too short to permit the full realization of the TSP objectives. It was apparent that this was due to lack of funds. Since the TSP was a public-private sector social welfarist model, it was necessary to have lobbied for political will from the Ministry of Works and

Housing to support the partners with funds to effectively implement the project, since at the end of the day it would increase government revenue through improved water tariff payments,

Also, the TSP partners could have estimated the capacity of the poor to pay for the total annual water bill for a year based on their average income levels and estimated consumption, and then involved other public and private sector organizations to help finance the water tariff deficit during the intervention period for water poverty reduction. This could then be gradually withdrawn either after building the capacities of the poor to pay, or after the diversification of the existing technology to suit the absorptive capacity of the beneficiary economic threshold in terms of income levels.

Furthermore, this thesis has revealed different modes of tariff collection, including monthly payment at the service providers' station office, monthly collection by moving from house-to-house by the Community Committee and Water Board members, cash-and-carry by Community Committee members, monthly collection at the standpipe by the Water Board members, and now cash-and-carry by Water Board members. The very need to reconsider the TSP mode1 in Dalun means that none of these methods has been sustainable in terms of the maximization of the collected water tariffs. In everyday application of economics, varied goods and services are sold on cash basis on the market, and customers buy their preferences according to their pocket levels, while those who have none can refrain from buying altogether.

It is also a common notion that a trader can sell goods to a public sector salaried, or a private sector waged employee believing with over 90% certainty that the client will pay a the end of the month because he/she earns income monthly. This is the relationship between the GWCL and the poor community public water users. But the inconsistencies here are that first, water is a lifeline wire without which life would be impossible, it is therefore a state responsibility to provide this essential basic utility service to its people. Secondly, the majority of the categories of people considered under the TSP model do not earn income on monthly basis; they are mostly farmers whose income speculations are annual. It is therefore recommended that a perfect pro--poor tariff structure should be designed to tally with a pro-poor water service technology in terms of cost, and an annual premium calculated for each household based on the pressure

exerted on the water system by experts contracted for the purpose to ensure a cost-benefit or win-win effect to all parties. Renewable annual household water tariff premium codes could be assigned to each household by a special Pro-poor Community Water Service Department to be established by the GWCL/AVRL; copies of which should be kept by the community Water Boards for day-to-day administrative purposes.

Since this recommendation came from the respondents at Dalun in a Focus Group Discussion, it is worth trying, but that would mean indirectly or directly accepting the contributions of the other researchers used in this thesis, and so giving a greater advantage to the adoption of the Multi-factorial Pro-poor Community Water Service Model proposed in this study, over the TSP model in the context of the Dalun experience.

5.4. Special Recommendations

To suggest a way forward after the TSP experience in Dalun, the researcher proposed a model known as the Multi-factorial Pro-poor Community Water Service Model (or the Malongza's Model). It is not entirely new, but an outcome of the recommendations made by respondents, as well as reviewed literature on isolated pro-poor participatory development practices.

The Malongza's model is a model designed to meet the specific needs of low income communities through community needs assessment by tripartite partnerships and expressed demand by potential beneficiaries of public safe drinking water projects, identification, ranking and prioritization of the needs and beneficiary categories, as well as the resources, constraints and alternative opportunities for addressing the needs in a manner that takes into consideration the absorptive capacity of the beneficiary socio-economic threshold, and the implementation of strategies for improving this.

1. Initiation for partnership

The first tenet of the Multi-factorial Pro-poor Community Water Service Model involves an initial idealization, identification of potential avenues for application and relevant stakeholders, and the invocation of the stakeholders to enter into partnership, by a public, private, public-private sector, donors or community-based organizations engaged in or related pro-poor community water services. It may start with an invitation of potential partners to a platform

during which the initiator explains the idea, such as alternative ways of providing sustainable water services to poor communities through partnership. It would be useless to form a tripartite partnership to implement the Multi-factorial Pro-poor Community Water Service Model in an area without a situational analysis to prove that a particular pro-poor water project is required .(See Abrams, 2000/2001).

2. Tripartite partnership formation

Organizations from the public, private and public-private sectors that are satisfied with the idea and express interest agree to enter into partnership. This involves the formal identification of the partner organizations by names, the choice of name for the tripartite partnership, organizational/leadership structure, identification of the relevant sector specific potentials of the partners (such as water related technology, infrastructure, finance, project planning, environment, etc.), central location of the partnership, goal, mission and vision statements procedures for entry and exit of partners, sources of funding and/or contributions of partners, procedures for sharing benefits and risks resulting from the projects, and legality (agreements and legal registration of the partnership). These conditions constitute a partnership deed. (Osei, 1983).

3. Definition of geographical scope of operations

Best results from pro-poor community water services are obtainable if the tripartite partners are drawn from a common geographical area (such as within the same region or district of a country) with the target beneficiary communities. This is because apart from their familiarity with the socio-economic conditions of the local people, easy communication and interaction among the partners, project implementation, monitoring and evaluation become easy due to proximity. (See Kathy, 1999). Partners should therefore be guided by this principle in the definition of the geographical boundary for their operations. Where extensions are required outside the defined zone new partners in the immediate new locations must be identified and incorporated if branches of the existing partners do not exist there.

4. Identification of low income communities with sector specific problems for intervention

Usually a public or public-private water service provider has customer details, involving the segmentation of customers into geographical service areas and service categories. For instance, plate 4.1 in chapter four indicates in the customer details section the central service place (Tamale), the intermediate service centre (Kumbungu) and the service point (Dalun Station or Dalun Kanbong Naa Fon). These are hierarchically arranged on a water bill statement of account, and in the case of the GWCL the service point or the smallest service location is rather at the top and the largest down. The top locations or service points are usually villages or smaller towns and the service category (Domestic or Stand Pipes) is related to the income stratum of the target customer. Domestic pipe connections are meant for high or middle income households, commercial connections are meant for larger business organizations while stand pipes are for low income people (TWOP Report, 2007-2008). A number of factors are considered under this tenet.

a. The need for the identification of target communities for intervention should be purposive

   This could be through a request from a government ministry as a component of rural development planning, a donor for the purpose of project sustainability, expressed demand from the local people and a service provider in an attempt to reduct revenue losses.

b. Initial indicators

   There should be an initial source of information as prove that a particular or a set of problems exist(s) in public water services in an area considered as a low income community (such as problems of tariff payment, cost sharing in system maintenance, low infrastructural base, waste of water, illegal tapping, irregular water supply, high tariff rates, poor community participation among others). Some of these could be obtained from the service provider's records.

c. Baseline survey

The public-private sector partners of the tripartite organization should carry out a socio-economic survey to map out the affected service area clearly, to examine the extent of the problem, and identify the socio-cultural and economic factors (such as belief systems, occupations, the size and nature of household income flow, leadership structure and other aspects of social organization and how they influence decision-making process among others) with the purpose of establishing a relationship between these and the specific problem for which intervention is required. The data obtained from the survey should be compiled to constitute a baseline or community profile document as a source of reference for problem identification and ranking.

d. Problem diagnosis

The partners examine the detailed information in the community profile and diagnose the problem(s) on the basis of the socio-economic conditions that spell out the cause-effect variable relationships, after which prioritizations are made for project proposals and interventions, using Participatory Rural Appraisal methods (PRA). (See Twumasi, 2001).

5. Interventions in pro-poor community water services

This is the last tenet of the Multi-factorial Pro-poor Community Water Service Model, and constitutes the stage for the completion of the tripartite partnership through the inclusion of community representation, and the commencement of the participatory pro-poor community water services intervention. It employs the tri-sector and multi-factorial approaches considered in the following steps.

Step 1: Problem awareness creation for community acceptance

The public-private sector partners of the tripartite organization arrange to meet the appropriate community leadership structures such as traditional and local authorities including the chief and elders, the Assembly person and other relevant stakeholder organizations in the community such as the Community Water and Sanitation Agency (CWSA). The purpose is to disclose the identified problem(s) of water services in the area as expressed by any of the parties indicated

earlier, and the diagnostic report based on the baseline survey. The community leaders are given the opportunity to discuss the problem(s) for confirmation, alteration, acceptance or rejection. The agreement by the community leaders that the problem exists and a subsequent expression of desire for intervention is a precondition for project success. (Abrams, 2000/2001).

Step 2: Project Identification for addressing the problem

Based on the identified problems in the public water services in the community, at a community forum or stakeholder platform the most pressing need could be selected by pair-wise ranking or any other PRA method (Kane, 1995) for a specific project to be designed to address the problem. For the sake of specificity and as an example, this thesis shall adopt poor tariff payment as a problem and community participation in the tariff collection process as a project for the rest of the fifth tenet of the Malongza's model (since it was the problem this study has examined and seeks to improve upon). Thus, we assume the identified project is the incorporation of community participation into the water tariff collection process as a component of a tripartite partnership in pro-poor public water services.

Step 3: Preparation of the project

At this stage the public-private sector partners reveal themselves and declare the intension to establish partnership with a community structure (such as a Water Board), and the local level authorities allowed to use their own criteria for the selection of the members of such a structure (but there must be representativeness in membership composition on the basis of gender and spatial factors). This is also the stage for coming out with a comprehensive proposal on what is to be done by each partner, the goals and objectives, the indicators and means of verification, the resources (material and financial) needed and the expected sources, as well as the social cost and benefits of the project (Botchwey, 2006). This stage considers the possible challenges from the existing situation such as poverty as an influencing factor on willingness to pay for water, and alternative ways of overcoming that. Here again, the skills, knowledge, and other qualities of the partners are identified for specific areas of application in the project for role sharing during the implementation stage.

Step 4: Project Appraisal for risk management

Since the Malongza's Model is pro-poor oriented, it takes the inability of the beneficiaries of the project to make adequate payment for public water services into consideration. In other words, a cost-benefit analysis of the project may be necessary, but does not lead to the rejection of the project on the basis of unprofitability, but rather to find solutions that ensure the sustained extension of water services to the poor (JICA, 1997) by finding alternative ways of financing water tariff deficits in poor communities. The Multi-factorial Pro-poor Water Service Model suggests the following issues for consideration in the appraisal stage.

a. Community annual tariff determination

   An estimation (or adoption based on research findings from other communities of similar income levels) of the proportion of the annual water tariff that the community is capable of paying, say 20 to 30% (see JICA, 1997; SNV, 2009), should be made.

b. Determination of alternative ways of absorbing the proportion of water tariff that cannot be paid by the low income community

   This could be by proportionate allocation to benevolent public and private sector organizations outside the tripartite membership (and operating in the central place of the service point under consideration) but which have been confronted to extend aid to the poor community, and so become affiliated organizations. About 30% of the tariff deficit could be shared out among the affiliated organizations with an estimated level of profits (as part of profit tax), such that the impact on the individual organization would be insignificant (say 2% each). The Government could also maintain the 10% contribution to water investment cost (CWSA Act, 1998- Act564, as in Bacho, 2001) as water tariff subsidy for poor communities benefiting from existing public water systems by incorporating it into the District Assembly Poverty Alleviation Fund.

For the remaining 60% of the deficit, the pareto optimality principle (Munasinghe, 1992) could be applied by sharing it among the rich households in the central place of the low income community under consideration in the form of additional tax on public water use, which might not also have significant effects on the urban people (such as 0.5% added to actual water bill, depending on the value of the remaining tariff deficit for the poor). This

idea of the model derives it origin from the success of the National Health Insurance Scheme in Ghana, in which employees on the Social Security and National Insurance Trust (SSNIT) scheme make compulsory contributions of 2.5% of their insurance premiums to cover themselves and the needs of the aged and children, as well as state subsidies and institutional contributions to pro-poor water services in the USA (JICA, 1997).

c. Project duration

For an appropriate duration of the project, this pro-poor deficit management strategy should last for a grace period of three years, which is the suggested duration of the tripartite partnership project in a community (See JICA, 1997). Within this period effort is made to promote income generating activities in the community to increase the capacities of the beneficiary communities to take full responsibilities for water tariff payment by the end of the project period through multi-factorial approaches (Munasinghe, 1992; Todaro and Smith, 2009). In other words, the Malongza's model is multi-factorial problem solving oriented, and the associtated activities are contbutory to the meeting of long-term development goals, such as the first Millennium Development Goal (MDG 1), which aims at eliminating absolute poverty and hunger (See Todaro and Smith, 2006).

Step 5: Implementation of the project

This is the actual execution of all the other steps discussed above. It is appropriate for the partners to develop a work plan to guide the step-by-step execution of the model (Botchwey, 2006). The following are relevant considerations for this step.

a. Identification of the community representative structures

The appropriate community participatory structures should be identified, such as Water Boards and their formal integration into the tripartite membership, as well as their capacity building for efficiency (as discussed in chapter 4).

b. Role definitions for the members

The potentials and capabilities of the partners should be assessed and their roles defined and allocated, such as described in the partnership deed.

c. Inventory and rehabilitation of existing water infrastructure by the public sector This is followed by a display of technological options for water supply for low income communities (provided previous models did not consider this, such that the existing technology is inappropriate), as well as the associated cost and the implications on water tariff rates for the beneficiaries to select from. This is to promote democracy, service quality and affordability and so increase willingness to pay (Munasinghe, 1992; Abrams, 2000/2001).

d. Public awareness creation and education on positive water use behaviour This could be through the formal introduction of the Water Boards and other partners of the tripartite and their duties, responsibilities for tariff payment, contributions for maintenance of service components of the water system, reporting faults to the Water Board, preventing high tariff rates through waste of water, and ensuring environmental friendliness by draining all accumulated water around the standpipes to prevent disease. This could happen at a community forum at the chief's palace.

e. Determination of an appropriate tariff structure and most suitable mode of payment

If a comprehensive socio-economic household survey is conducted it could be possible to determine the average household income of the area, and so facilitate the determination of a tariff rate based on a proportion of the income, such as the 5% rule (Alexander, 1993). This might, however, be misleading if income is skewed towards a few rich people; the average income could be high while the society could be full of the poor majority (Amanfo, 1990), hence such a tariff structure could be regressive. Bargaining could also be adopted, but since the model has an estimated percentage of the annual water bill for the people, bargaining could have a dangerous effect of yielding returns far below the set target.

Since the model proposes the introduction of low cost technology, tariff rates for existing high cost technology could be relatively higher than those for the low cost technology. The model incorporates an aspect of land use planning by assuming that settlements are stratified on the bases of zones of poor people, middle income and rich people's homes (See Getis, Getis and Fellmann, 2006). Thus, the zones of the rich and large consuming industries are given commercial or private household connections, the relatively expensive public standpipes should be relocated at the zones of the middle income people, and low cost technology systems such as mechanized wells should be provided for the poor to increase affordability and accessibility. However, there should be democracy in the choices, but with emphasis on the ability to pay.

It is possible to obtain data for the computation of the annual average quantity of water used in the community from past consumption records from the main service provider, which go along with the annual water bills. The 20-30% tariff allocation to the community can then be computed. It is this figure that is presented to the Water Board in the presence of other community members at a forum, for authentic participatory discussion (Midgley *et al*, 1986; Millar, 2007; Obeng, 2008) regarding its distribution among the various income strata by a progressive tariff approach guided by experts from the revenue division of the service provider.

The generally agrarian nature of rural African communities makes income flow in such areas seasonal. Results from past and present surveys show that cash-and-carry and monthly payments of water bills have not yielded successful results in reducing water bill arrears (JICA, 1997; Water Aid Malawi, 2008). This study in particular revealed that the people of Dalun are able to pay for water services better during the post-harvest period (usually from September to November). The tariff payment performance for the year 2006 for the three zones of Dalun studied confirms this view. FGD results with men and women groups disclosed that the people prefer to pay water bills annually after harvest. Here again, the experience of the transition from the District Mutual Health Insurance Scheme (DMHIS) to the NHIS in Ghana compels the proponent of the Multi-factorial Pro-poor Community Water Service Model (Malongza's model) to support the idea of

introducing annual payment of water bills instead of the existing methods in low income agrarian communities. Thus, an annual household water premium based on the pressure each household exerts on the water system (Munasinghe, 1992), and calculated from the proportion of the annual tariff allocated to the community could be a prudent policy. These factors would not only ensure a perfect allocation of the percentage of the annual bill to the community, but also bring about equitable distribution of quality water services, increased ability to pay and sustainability of the project.

f. Effectuation of pareto optimality and tripartite affiliated organizations' benevolence

The 60% of the pro-poor water tariff deficit to be absorbed by Pareto optimality (P.O.) should not be an imposition onto the urban population, otherwise it could generate social disorganization effects (Byron and Robert, 1989). Geographically appropriate media, such as radio, schools, Churches, Mosques and market places could be used for public campaigns on the need to save the poor communities from water poverty. The campaign should emphasize that the effects would not be heavy on the individual and it is for a specified period of time, which should be declared (say three years). For best results the campaign should be persuasive, and the implementation should follow after a convenient time of the campaign (say one or two months). Partners then observe urban public reaction after the implementation of the P.O. principle for policy review.

At a multi-stakeholder platform to which the tripartite organization shall invite prospective public and private sector institutions, the intended 30% as an extension of benevolence to the poor community people should be declared for discussions leading to acceptance or other wise, and the criteria for sharing among the interested parties, which could be based on business profit levels, size or any other factors agreed upon.

The platform should also include community development practitioners, such as NGOs engaged in skills training for non-farm activities, small and medium scale micro-finance organizations, agricultural development organizations among others. These should be briefed on the profile of the target community and possible areas of interventions based on their respective areas of operations, and bidding them to implement intervention

projects in the community for poverty reduction within the specified period of three years. Interested parties could register and submit project proposals to the executives of the tripartite organization, who would scrutinize the proposals to ensure that they are pro-poor oriented and consistent with the overall project goal, and subsequent approval. This is an exhibition of the character of the model in incorporating multi-pronged approaches (Todaro and Smith, 2009), for the sustainable reduction of water poverty in low income communities.

g. Implementation of the tariff collection process

After all the above stages have been covered, the new tariff collection process could be implemented after the capacity building of the Water Boards as described earlier in chapter four.

h. Project Monitoring and Evaluation

This stage would be easier if the work plan embodied the project monitoring and evaluation components. The multi-sector and multi-factorial nature of the Model demands two levels of monitoring and evaluation, involving different parties from different sectors. The model establishes a tripartite administrative body as contained in the partnership deed, which should be responsible for regulating the activities on the work plan. The first level of monitoring and evaluation takes place while the project is on-going and is known as formative monitoring (See Botchwey, 2006). During this period the partner organizations periodically monitor and evaluate their activities to see whether they are conforming to the objectives set, and whether resources are being used as intended, what the associated deviations are and the possible remedies. Formative monitoring should be done jointly with representatives from the various partner organizations to ensure checks and balances or accountability of partners. This could be done quarterly, half yearly or annually.

At the end of the project period, summative evaluation is conducted. This is aimed at assessing the overall project in terms of the goal and objectives (Botchwey, 2006). It is conclusive of the general performance of the project and its partners; whether it was a

success or a failure. This often leads to project review and the way forvyard. It is recommended that summative evaluation should involve local students from tertiary institutions. Local consultants may also be involved but they have high cost implications (Kathy, 1999; SNV, 2009). The use of external evaluators is to allow donors and project partners to get a real picture of the intervention without biasness in the evaluation report.

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APPENDICES

Appendix i

A RETROSPECTIVE HOUSEHOLD QUESTIONNAIRE ON THE ASSESSMENT OF THE TRI-SECTOR PARTNERSHIP (TSP) MODEL IN PRO-POOR WATER TARIFF COLLECTION AT DALUN

The administration of this questionnaire is purely for an academic purpose that leads to a partial fulfillment for th award of the MPhil degree in Development Studies by the University for Development Studies. Any information obtained shall therefore be treated confidentially.

Please, for each question in the various sections indicate the chosen option(s) by ticking or filling in the blank spaces with the most appropriate answer (where applicable)

SECTION A: BACKGROUND OF RESPONDENTS

1.Community:---------- [01=Dalun Station] [02=Dalun Nayili Fon] [03=Dalun Kanbong Naa Fon]

2 . Sex [01=M] [02=F] 2. Age [01=15-45] [02=46-64] [03=65+]

3. Marital status: [01=Married] [02=single] [03=widow/ widower]

4. Educational level: [I01=No formal education] [02=Basic] [03=Secondary/Tertiary] Other (specify): ---

5. Occupation: [01=House-wife] [02=Farming] [03=Trading] [04=Formal sector]
Other (specify): ----------

6. Household size: [01=1-2] [02=3-5] [03=6-8] [04=9-11] [05=12+]

7. Monthly household expenditure in GH¢ [01=1-9] [02=10-20] [03=20-30] [04=30-40] [05=40-50] [06=50-60] [07=60-70] [08=70-80] [09=80-90] [10=90-100] [11=above 100]

8. Income stratum of respondent
[01=low] [02=Medium] [03=High]

9. How much was your household willing to pay for an 18 liter bucket full of water before the year 2007?
[01=Less than 2 Gp] [02=2Gp] [03=More than 2Gp] [04=Not at all] [Other----------]

[01=Water bills without services at times] [02=No adequate community participation in the determination of water bills] [03=The water is the community's environmental resource] [04=Water supply is the social responsibility of the government]

10. How much was your household willing to pay for the same quantity of water in Q. 8 after the year 2007 with improved services?
[01=Less than 2 Gp] [02=2Gp] [03=More than 2Gp] [04=Not at all] [Other----------]

SECTION B: THE SITUATION OF POTABLE WATER SUPPLY

11. What facilities are available for water supply in this community?
[01=Dam/stream/river] [02 =Wells] [02=Boreholes] [03=Standpipes] [04=Private household pipe] [05=Water vendors] Other----------

12. How does your household obtain potable water?
[01=Private household pipe] [02=Public standpipe] [03=Public borehole] [04=Private well] [05=Public well]
Other (specify): ----------

13. How would you describe the working of the water system before 2007?
[01=Good] [02=Average] [03=Bad] [04=Very bad] [Other……]

14. What was the condition of the water system in 2007?
[01=Improved] [02=Bad] [03=Very bad] [04=No change]

15. What do you remember about the supply of piped water before 2007?
[01=Adequate] [02=Irregular supply] [03=Severe shortage] [Other……..]

16. What was your observation about the availability of piped water in 2007?
[01=Adequate] [02=Inadequate] [03=Moderate] [04=Over rationing] [Other……..]

17. Any comment on the water supply situation before and during 2007 and the way forward?

SECTION C: EARLIER MODELS OF COMMUNITY WATER SERVICE DELIVERY

18. Which of the following has/have ever been applicable in the provision of water services in your area?
[01=Public ownership and operation] [02=Public ownership and private operation] [03=Private sector operation] [04=Private sector participation] [05=Public-private sector partnership]

SECTION D: THE PERFORMANCE OF EARLIER MODELS OF WATER SERVICES BEFORE THE TSP

19. Which organizations provided potable water services in your area before 2007?
[01=Ghana Water Company/ Aqua Viten Rand Ltd.] [02=Private water vendors]
[03=District Assembly] [04=NGOs] Other (specify): ----------

20. What was the nature of the water services before 2007?
[01=Provision of water infrastructure] [02=Extension of water services] [03=Co-funding community water projects]
[04=Repair and maintenance of water infrastructure]
[05=Monitoring/evaluation] Other (specify): ----------

21. Were there any observed deficiencies in the performance of the service provider(s) before 2007? [01=Yes] [02=No]

22. If 'yes' in Q. 21 above, give reasons.
[01=High level of technical faults with poor maintenance] [02=Poor consideration for community participation] [03=Some times water bills without services] [04=Irregular billing and collection of tariffs leading to arrears] [Other……..]

23. Were there any community-based civil societies involved in water services before 2007? [01=Yes] [02=No]

24. If 'yes' in Q. 23 how were the community structures involved?
[01=Reporting faults] [02=Maintenance] [03=Mobilizing community members to pay bills] [Other……...]

25. Give a brief description of the tariff collection process before 2007

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26. How effective was the tariff collection process before 2007?
[01=High level of tariff evasion] [02=Huge amounts of unpaid bills] [03=Collectors were able to collect all tariffs] [04=Was generally poor] [05=Was generally good] [Other.....]

27. If you think the tariff situation was poor before 2007, what were the reasons?
[01=Poverty] [02=Poor services] [03=High tariffs] [04=Low participation] [05=Lack of trust in the billing process] [06=Misappropriation of paid bills]

28. What were the coping strategies to the tariff situation before 2007?
[01=Reporting defaulters to the chief] [02=Termination of services] [03=Involving water committees] [Other.....]

SECTION E: FACTORS THAT INFLUENCED THE FORMATION OF THE TSP

29. Have you heard of the TSP and its activities in this community before? [01=Yes] [02=No]

30. If 'yes' in Q. 29 since when? [01=2006] [02=2007] [03=2008]

31. What was the composition of the TSP?
[01=Elected Water Board, GWCL/AVRL, NGOs] [02=GWCL/AVRL and District Assembly] [03=GWCL/AVRL, Community Committees and District Assembly]

32. What was the purpose of the TSP?
[01= Involve commutity participation in the management of the water system] [02= Provide water to the poor at reduced tariff rates] [03=Ensure effective tariff collection through community participation] [04=Ensure cost sharing in the management of the water system] [05=Ensure cost recovery in water services]

33. What was the role of the community Water Boards in the TSP?
[01=Management of the water system] [02=Maintenance of the water system] [03=Collection/payment of water bills] [04=Reporting technical faults to the GWCL/AVRL] [05=Providing communal labour]

SECTION F: INVOLVEMENT OF COMMUNITY WATER BOARDS IN THE TARIFF COLLECTION PROCESS

34. How is your community represented in participatory water decision-making such as water tariff determination?
[01=By the Chief] [02=By the Water Board] [03=By the Assemblyman] [04=By the Community Committee]

35. ***Before*** the year 2007, was the community involved in the determination of water tariff rates? [01=Yes] [02=No]

36. ***After*** the year 2007, was there community participation in tariff determination? [01=Yes] [02=No]

37. Who was directly involved in the collection of water tariffs after the year 2007?
[01=The Water Board] [02=GWCL/AVRL officials] [03=The Community Committee] [Other.....]

38. If community structures were involved in the tariff collection process after 2007, what form of capacity building were they given for the purpose?
[01=Proper tariff record keeping] [02=Bill sharing/tariff collection] [03=Meter reading for tariff determination] [04=Fault detection and reporting] [05=Education of residents on importance of water tariff payment]

39. Do you think that the TSP led to improvement in water tariff collection after the intervention? [01=Yes] [02=N0]

40. Which organization was responsible for the capacity building of the community structures for the tariff collection process if any?
[01=SNV] [02=Biwater Ltd.] [03= GWCL/AVRL] [04=Pragmatic outcomes Incorporated] [05=Do not know]

41. Briefly explain how the participatory tariff collection process after the capacity building under the TSP period was different from previous methods.
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.....

SECTION G: THE EFFECTIVENESS OF THE PARTICIPATORY TARIFF COLLECTION PROCESS

42. Do you think that there was an improvement in water tariff collection after the capacity building of the community structures?
[01=Yes] [02=No]

43. If 'yes' in Q. 42 what are the indicators of the effectiveness?
[01=Regular collection of water bills] [02=Improvement in total tariffs collected] [03=Reduction in tariff arrears] [04=Reduction in cases of disconnections] [Other.....]

44. What were the contributory factors to the improvement in the tariff collection process if any?
[01=Reduction in tariff evasion] [02=Increased confidence in the billing process] [03=Commission for dedicated work] [04=Improved participation]

45. If there were improvement in water tariff collection after the intervention, what were the effects of the change on water services?
[01=Regular supply of water] [02=Improved water quality] [03=Prompt response to cases of technical faults] [04=Rehabilitation of water infrastructure] [Other.....]

SECTION H: GAPS IN THE TSP MODEL

State any problem or challenge that was associated with the TSP in relation to any of the aspects given below

46. Institutional composition----------
47. The level of community participation----------
48. The legal relationships between the partners of the TSP----------
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49. The level of commitment to the TSP agreement by the various partners----------
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RECOMMENDATIONS:

50. **Make a suggestion for the improvement of the TSP model for a better way forward**

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Appendix ii.

A RETROSPECTIVE INTERVIEW GUIDE FOR OFFICIALS OF THE PUBLIC AND PRIVATE SECTOR ORGANIZATIONS OF THE TSP ON THE PURPOSE OF THE PARTNERSHIP AND THEIR ROLES IN THE INCORPORATION OF THE WATER BOARDS IN THE TARIFF COLLECTION PROCESS AT DALUN

Section A: Earlier Models of Community Water Service Delivery

1. What models of community water services were in use before the decision to introduce the TSP ?
2. How did these models operate?
3. What considerations were given to the community people under the earlier models?
4. Please, make a retrospective qualitative assessment of the performance of the earlier models in terms of water tariff payment and collection

Section A: Factors that Influenced the Formation of the TSP

1. Please, give a brief introduction to the concept of the TSP
2. Which organizations were members of the TSP during its period of intervention?
3. What factors influenced the formation of the TSP in pro-poor water services in the Dalun community?
4. What criteria were used in determining the membership of the TSP?

Section B: The Role of the TSP in the Incorporation of Water Boards in the Tariff Collection Process

5. When were the community Water Boards at Dalun formed?
6. What procedures were followed in the incorporation of the Water Boards into the tariff collection process?
7. What form of capacity building was given to the Water Boards to promote their efficiency in the tariff collection process?
8. How were the roles of the Water Boards in the TSP era different from previous forms of community participation in water tariff collection?

Section C: Effectiveness of the Methods Adopted by the TSP in Tariff Collection Process through the Water Boards

9. What monitoring and evaluation schemes were instituted for the participatory tariff collection process?
10. How did the TSP arrive at the pro-poor water tariff determination?
11. What steps were put in place to ensure accountability in the tariff collection process?
12. To what extent were the objectives of the TSP met through community participation in pro-poor water tariff collection at Dalun?
13. Was the TSP model an improvement over previous forms of tariff collection?

Section D: Identified Gaps in the TSP Model

14. State any problem or challenge that was associated with the TSP in relation to any of the aspects given below

- Institutional composition
- The level of community participation
- The legal relationships between the partners of the TSP
- The level of commitment to the TSP agreement by the various partners

What *recommendations* would you make for the way forward?

Thank you

Appendix iii.

A RETROSPECTIVE FOCUS GROUP DISCUSSION GUIDE FOR WATER BOARD MEMBERS, MEN ONLY, WOMEN ONLY AND MEN AND WOMEN'S GROUPS ON THE INFLUENCE OF COMMUNITY PARTICIPATION UNDER THE TSP ON THE WATER TARIFF SITUATION IN DALUN.

Section A: Community Participation in Water Tariff Collection before the TSP Intervention

1. The community structures before the TSP
   i. Were there any community structures involved in participatory water tariff collection with the GWCL before the TSP period?
   ii. What name was given to the community participatory structures if they existed?
   iii. What were the specific functions of the community structures in relation to tariff collection?
   iv. Evaluate the performance of the community structures in the water tariff collection process before the TSP intervention
   v. What were the effects of the performance of the community structures on the nature of water services before the TSP period?

2. The Community structures after the TSP
   i. Were there any community structures involved in participatory water tariff collection with the GWCL after the TSP period?
   ii. What name was given to the community participatory structures after the TSP intervention?
   iii. How were the functions of the community structures in relation to tariff collection after the TSP different from those of the period before?
   iv. Evaluate the performance of the community structures in the water tariff collection process after the TSP intervention
   v. How did the effects of the performance of the community structures influence the quality of water services after the TSP period?
   vi. What were the identified gaps or challenges in the TSP model as implemented in your community?
   vii. What recommendations would you make for the way forward after the TSP experience in your community?

Thank you