

**WATER GOVERNANCE IN RURAL COMMUNITIES OF THE SEKYERE
CENTRAL DISTRICT OF GHANA**

By

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A thesis submitted to the School of Graduate Studies, Kwame
Nkrumah University of Science and Technology, Kumasi in
Partial Fulfillment of the Requirements for the Degree

of



**MASTER OF SCIENCE
DEVELOPMENT POLICY AND PLANNING
Department of Planning
College of Architecture and Planning**

OCTOBER, 2012

DECLARATION

I hereby declare that this submission is my own work towards the Master of Science in Development Policy and Planning and that, to the best of my knowledge, it contains neither materials previously published by another person nor materials which have been accepted for the award of any other degree by this or any other university except where due acknowledgement has been made in the text.

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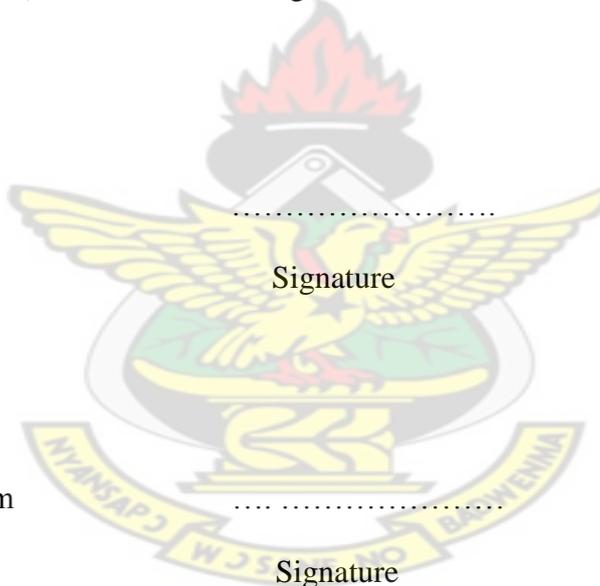
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ABSTRACT

Water plays a pivotal role in sustainable development, including poverty reduction. The importance of governance for sustainable development has been recognised for some time but within the water and sanitation discipline, for a long time there was little recognition of its centrality. Experts (particularly the Global Water Partnership and the United Nations Development Programme) have agreed that water crisis in the developing world and a rural African community in particular, is a crisis of governance not necessarily a crisis of water scarcity.

The introduction of governance into the water sector is an emerging concept particularly in the developing world. This has therefore raised a myriad of questions, which are of great importance to this special study. Some of the questions are: Who are the key actors in water governance at the local level and how effective they have been in playing their respective roles? What are the challenges of water governance at the local level?

This study has investigated the extent to which water governance can be made effective in the Sekyere Central District of Ghana. To be precise, the specific objectives of the study include to; identify the key actors in water governance and how effective they have been in playing their respective roles at the local level and identify the challenges of water governance at the local level.

The study was carried out in four rural communities in the Sekyere Central District of Ghana. Various institutions and bodies involved in water governance have also been investigated.

The study revealed that there are various customs and beliefs that relate to access to and management of water resources and water facilities at the community level but they are not documented. All the communities recognized water as a God given resource and that every person has the right of access. The study revealed that about 74 percent of community members do not consider themselves and the government as partners committed to a shared vision of better water service provision. Again the analysis shows that majority (71%) of community members were not aware of water related laws in the country.

As a recommendation, institutions involved in water governance need to intensify awareness campaigns on the policy changes and the legal framework governing access to and control of water resources and water facilities. Moreover, there is the need to evaluate, document, and promote the good traditional practices that relate to the access and management of water resources/facilities. In order to operate as a legal entity, it is suggested that the WATSAN Committees need to be assisted to develop their own policies, systems and procedures as well as rules and regulations.

Finally, the study concludes that good governance and for that matter good water governance requires that all policy decisions are transparent so that communities can easily follow the steps taken in policy formulation.

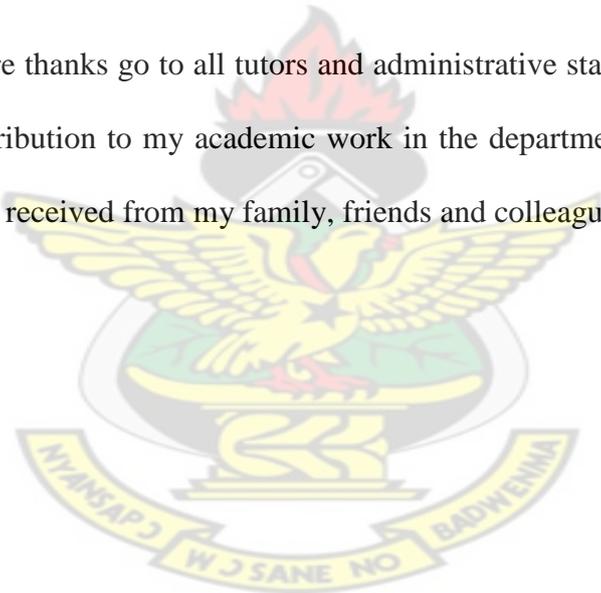
ACKNOWLEDGMENTS

To the one who gives wisdom, knowledge and understanding- Jesus Christ, I appreciate for his grace which has made this write-up a success.

My sincere thanks go to my supervisor, Dr. Imoro Braimah, under whose auspices I carried out this work. I say, God bless you for the time you made out of your busy schedule to critically scrutinize every piece of work which I came out with. How can I forget this useful piece of training you have given to me.

To my parents and siblings I express my profound love and appreciation for your care and support in diverse areas of my educational endeavour. May the blessings of God follow you now and forever.

Furthermore, my sincere thanks go to all tutors and administrative staff of the Department of Planning for your contribution to my academic work in the department. Lastly, I appreciate the tremendous support received from my family, friends and colleagues.



DEDICATION

This piece of work is dedicated to the Lord Jesus Christ, from whom I receive strength for academic attainments. I also dedicate this work to my dear dad Osei Kwame, and my dear mum Doris Felicia Odame for sponsoring my education with all enthusiasm. To you I say, may the blessings of the Lord overshadow you now and evermore.

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CHAPTER ONE

GENERAL INTRODUCTION

1.1 Introduction

Water governance refers to the range of political, social, economic and administrative systems that are in place to regulate the development of water services at different levels of society. Governance looks at the balance of power and of actions at different levels of authority. It translates into political systems, laws, regulations, institutions, financial mechanisms, civil society development and consumer rights – essentially the rules of the game. Effective water governance helps to avoid the frequent mismatch between central government policies and priorities on one-hand and people’s concerns and aspirations, on the other hand (UNDP 2003).

Water is a basic service that adds quality to human life. Its absence or inadequacy makes life unbearable for the individual at the household level. It is in view of this that the Millennium Development Goals (MDGs) seek to lay emphasis on this all-important service. Water finds its way in MDG 7, which lays emphasis on ensuring environmental sustainability. The water target under this goal is to reduce by half the proportion of people without access to safe drinking water by 2015 (Gumisai, 2004).

Potable water coverage is very low in Ghana with about 45 percent as at 2009 for rural areas. If the Millennium Development Goals (MDGs) are to be achieved, then the issue of water governance has to be taken into consideration with all seriousness. This is so because water plays a key role in the various aspects of the MDGs (Eugene, 2010).

Lack of access to clean drinking water is a central public health concern globally and in Ghana. No single intervention has greater overall impact upon national development and public health than does the provision of safe drinking water.

Potable water is essential for achieving all the MDGs and hence contributes to poverty reduction globally. To this end, this study critically explores how best governance within the water sector can be made more effective to ensure the sustainability of water services at local levels.

1.2 Problem Statement

The importance of governance for sustainable development has been recognised for some time but within the water discipline, for a long time there was little recognition of its centrality. The Global Water Partnership (GWP) Framework for Action, prepared for the Second World Water Forum, stated that water crisis is often linked to bad governance. (GWP, 2002).

During the 2002 Johannesburg Earth Summit, world governments committed themselves to a most noble and challenging task: to reduce by half the number of people without access to safe water and basic sanitary facilities by the year 2015. Each government was to lead the way, chiefly by putting in place the legal and policy tools, creating regulatory and management institutions, providing strategies, and coordinating national efforts and mobilising, consolidating, and managing both internal and external resources. Put together, these issues contribute towards governance of water. Thus, how fast a nation moves towards the realisation of the 2015 goals depends largely on the effectiveness and efficiency of its sector governance.

According to the United Nations World Development Report in 2010, most African countries are not on track to meet the water and sanitation MDG targets and stated that water crisis in the developing world and rural African communities in particular, is a crisis of governance: not necessarily a crisis of water scarcity or lack of project funds.

In Ghana, the Water Resources Commission Act (Act 522 of 1996) established a Water Resources Commission (WRC), responsible for the regulation and management of the utilization of water resources and for the coordination of any policy in relation to them.

In addition, the Government has adopted a National Community Water and Sanitation Policy (NCWSP) and prepared a Strategic Investment Programme (SIP) to rationalize the rural water and sanitation sector to promote and improve the delivery of water services in terms of economy, efficiency, effectiveness and satisfaction (CWSA, 2004).

In spite of all these policy measures in place, there is still poor provision of water services in the country. This is because there is a big gap between the formulation of these policies and their implementation. Again, reduced access to water has contributed to the incidence of some water borne diseases in Ghana, including cholera and diarrhoea.

According to the District Statistical Office, the Sekyere Central District is faced with a myriad of health problems that are directly related to poor water quality. Currently, potable water coverage for households is 40 percent in the district. This therefore calls for immediate attention to address water problems facing the district by ensuring effective water governance. Hence exploring how water governance at the local level can be made effective.

1.3 Research Questions

This study seeks to provide answers to the following questions:

- Who are the key actors in water governance at the local level and how effective they have been in playing their respective roles?
- What are the challenges of water governance at the local level?
- What pragmatic actions can be taken to address the identified challenges at the local level?

This special study will find answers to these and many more questions related to water governance at the local level.

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1.4 Objectives of the study

The objectives of this special study are two-fold: general and specific objectives. The overall objective of this special study therefore, is to determine how water governance at the local level can be made effective.

Specifically, this study is to investigate and seek clarification on the following:

- To identify the key actors in water governance and how effective they have been in playing their respective roles at the local level.
- To identify the challenges of water governance at the local level.
- To establish policy recommendations based on lessons accruing from research findings.

1.5 Significance of the Study

Water is essential for human existence. Access to potable water supply is a basic right and necessary to ensure a healthy population. Provision of safe water supply directly serves the objectives of public health by curtailing the spread of diseases. Water borne diseases are on

the increase in the Ghanaian countryside. This therefore calls for immediate attention to address water problems facing the country particularly at the local level by ensuring effective water governance.

More importantly, this study will provide information to the various key actors who are involved in water governance. For instance, by identifying the challenges of water governance, it will become easy to find lasting solutions to these challenges and hence improve upon service delivery.

Exploring the governance issues in the water sector will offer opportunity for ensuring effective community management which will go a long way to increase access to potable water supply especially for the poor. The provision of good drinking water can contribute immensely to the realisation of poverty reduction, the primary objective of the MDGs. There is therefore the need to explore this topic to find out how best water governance can be achieved at the local levels of society.

1.6 Scope of the Study

The study was limited to determining how the development of water services could be made effective through good governance. In essence, the focus was on water governance at the local levels. There was also a review of government laws governing water in the country as well as a testing of people's knowledge on these laws to see how they have affected community management of water.

The geographical location of the study was limited to the Sekyere Central District of the Ashanti Region. In order to effectively achieve the objectives of the study, the coverage area was further narrowed down to four communities in the district.

1.7 Limitation of Study

The limitation encountered in the course of writing this special study was lack of cooperation on the part of some men in responding to questions. There were instances where men referred the enumerators to the women for questionnaire administration. To them, it is women who fetch water at the household level and as such they should be more interested in water issues. This made it difficult to get the views of such men on how water governance could be made effective at the community level.

1.8 Organization of Study

This study is organised into five chapters. Chapter one has given a general introduction to the entire study. The second chapter reviews the body of literature relevant to the objectives of this study. The methodology and methods underpinning this study are detailed in chapter three. A discussion of the result and key findings is presented in chapter four, which eventually leads to the recommendations and a general conclusion captured in chapter five

CHAPTER TWO

LITERATURE REVIEW ON WATER GOVERNANCE

2.1 Introduction

In this chapter, key terms used in this study have been defined. Subsequently, concepts relevant to this study have been reviewed, bringing to the fore relationships which exist between some concepts. The body of literature on Water Governance was critically reviewed.

2.2 Water Governance

Over the past decade, a significant focus has emerged in the literature on governance and water governance. Bakker (2003: 5) defines water governance as “the range of political, organizational and administrative processes through which communities articulate their interest, their input is absorbed, decisions are made and implemented, and decision makers are held accountable in the development and management of water services.” Similarly de Loe and Bjornlund (2010) define it as “the ways in which decisions that affect water are made, who is involved in making those decisions, and how power is distributed in society.” Bakker (2007: 16) distinguishes water governance from water management, while acknowledging the two are intimately linked: “water governance refers to the decision-making processes we follow, how we make decisions and who decides; water management refers to operational approaches we adopt, and the models, principles and information we use to make decisions.” As applied in this thesis, water governance includes the structures, processes and actors – and the dynamic interactions among them – that facilitate and influence decisions affecting water services.

Water governance is conceived of as the sum total of processes, mechanisms, systems and structures that a State puts in place in order to shape and direct its water economy to conform to its near and long term goals (Shah and van Koppen, 2009).

The Global Water Partnership (GWP) defines water governance as “the range of political, social, economic and administrative systems that are in place to develop and manage water services, at different levels of society” (Rogers and Hall, 2003, 18). It implies the need to encompass a range of actors and agents which is much broader than government. It suggests a range of outcome which is broader than the management functions of individual authorities. Its reference to different levels of society implies recognition that outcomes may be different for these different levels, and that, for example, the poor may need special consideration in the working out of governance systems.

In addition, the Global Water Partnership (GWP) acknowledges that the notion of governance for water includes the ability to design public policies and institutional frameworks that are socially accepted and be able to mobilize social resources in support of them. Water policy and the process for its formulation, according to the GWP, must have its goal as the sustainable development of water services, and to make its implementation effective as well as involve the key actors/stakeholders in the process.

A central tenet of the governance concept is that it is about more than government. Governance extends social coordination and decision making beyond the state to include non-state actors, including resource users, citizens, private-sector interests and non-government organizations in decision making and implementation (de Loë, 2005; Plummer et al., 2005; de Loë and Kreutzwiser, 2007; Pahl-Wostl et al., 2007; Nowlan and Bakker, 2008).

As Lebel et al. (2006: 2) state: “Governance is not the sole purview of the state through government, but rather emerges from the interactions of many actors, including the private sector and not-for-profit organizations. It can be formally institutionalized or expressed through subtle norms of interaction or even more indirectly by influencing the agendas and shaping the contexts in which actors contest decisions and determine access to resources.” In the context of water, de Loe (2005) notes that decisions about the use and management of water should – and, indeed, do – involve actors beyond the state.

Two key themes regarding this shift are:

1. A broader view of the institutional context for water governance that is much more distributed or polycentric across a multiple scales and includes informal as well as formal institutional arrangements (McGinnis, 2000; Ostrom, 2001; Young, 2002; Adger et al., 2003; Plummer et al., 2005; Crona and Hubacek, 2010; Nowlan and Bakker, 2010).
2. A mode of planning that strives to be inclusive, collaborative and participatory in nature, and is grounded in discursive decision making (Healey, 1992; Dale, 2001; Adger et al., 2003; Booher and Innes, 2010).

Nowlan and Bakker (2010) refer to distributed and collaborative governance as “shared water governance”. They identify five key characteristics of shared water governance:

- Delegation by government of water governance to a council, committee, or organization;
- Rescaling decision making;
- Greater participation by a wide variety of non-state actors;
- Collaborative decision-making processes, often emphasizing consensus and trust-building;
- Science-based decision making, often requiring extensive fact-finding.

Nowlan and Bakker (2010: 49) stress the importance of maintaining government's role in water governance, noting that "Shared water governance works best when governments are committed to educate and empower citizens, build trust and help build collective wisdom." They also note the importance of sustained capacity, noting that the benefits of shared water governance will only be realized in situations where financial and other resources are guaranteed and sustained over the long term.

Obscuring of traditional jurisdictional and administrative boundaries and sharing of responsibilities among state and non-state actors requires increased attention to clarifying the roles of various governance actors to maintain transparency and accountability (Lundqvist, 2004; de Loë, 2005; Nowlan and Bakker, 2008).

Hill et al. (2008) discuss the relationship between harmonization and subsidiarity in water governance to assess differing degrees of and approaches to federal and provincial participation in water policy. Harmonization refers to the "process of achieving regulatory efficiency, effectiveness and clarity through standardization and centralization." Subsidiarity is "defined as the principle whereby a central authority does not take action (except in the areas which fall within its exclusive competence) unless it is more effective than action taken at lower levels" (Hill et al., 2008: 317).

Based on their analysis, the authors argue that it is not a matter of choosing one of two options (harmonization or subsidiary) but rather combining the two in ways that capture synergies to best deliver on objectives. So there is a need to explore which aspects of water governance would benefit from greater harmonization, and which from subsidiarity.

While the analysis of Hill et al. (2008) focused on the relationship between federal and provincial legislative regimes, the notion of balancing subsidiary and harmonization is also relevant to relationships between federal and provincial governments and municipal governments, and in decentralized governance relationships and institutions involving a range of government and non-government actors.

Importantly, governance in a sector like water must be perceived as a subset of a country's general governance system of how various actors relate to each other (Rogers & Hall, 2003).

2.3 Achieving Effective Water Governance

Tendler (1997) noted that a lot is known about what constitutes bad governance than about achieving good governance. Her case studies tend to question some conventional notions and preconceptions of how governance should be and drive us back to a close functional analysis of each individual case. Keohane and Ostrom (1995) provide empirical examples of water governance from the USA, Indonesia, Nepal, Mexico, Peru, Philippines, and Sri Lanka.

In all of these empirical studies the authors found strong evidence to support the notion that, despite a wide range of property rights regimes, user groups could develop into sustainable institutions over many years. Essentially, there is a possibility of identifying a level of centralization and decentralisation and regulation to produce effective water governance (Rogers and Hall, 2003).

Below are the identified principles of achieving effective water governance:

- Equity

Ensuring equity requires that governance arrangements deal fairly with all those concerned with the outcomes of decisions and actions. Equity is multi-dimensional, requiring attention to both the substantive elements of governance – who gains and who loses – as well as

procedural dimensions – who can and should participate in decision making (Syme et al., 1999: 52; Young, 2002: 15). It is important to recognize the distinction between equity and equality. Equality would mean all parties have an equal share of the available resource, whereas equity demands that all parties should have the opportunity to access sufficient water for human health and livelihoods. Satisfying procedural dimensions of the equity requirement means that governance arrangements must seek to include the plurality of interests with a stake in decision making (Dale, 2001: 136).

Engaging a diverse representation of actors and interests in governance ideally brings new ideas and diverse knowledge to decision making and strengthens ownership of proposed actions and outcomes (Dale, 2001; Sampford, 2002). In practice, the extent to which procedural equity is satisfied depends on the nature of planning processes and the openness of institutions – it thus relates closely to the notion of participation.

Satisfying substantive equity requirements ensures that benefits and costs of policies and decisions are distributed fairly among affected actors and interests (World Meteorological Organization, 2009). In the context of water governance, this criterion means addressing both who has access to water and in what quantities, and how the cost and benefits of water services are distributed among the various actors. This ideal is not to ensure actors and interests necessarily gain access to the same amount of water (that would be equal access), but that all should have the opportunity to access sufficient water for social and economic development (World Meteorological Organization, 2009).

➤ Efficiency

We live in a world of limited resources – financial, human and, increasingly, biophysical resources such as land and water. The efficiency of resource use thus must be an essential element of governance. As defined by Young (2005), efficiency is a measure of the extent to which goals are achieved with minimum expenditure of resources. Satisfying the efficiency criterion requires the use of biophysical, social and financial resources in ways that avoid waste and minimize overall use of material resources and energy use per unit of benefit (Gibson et al., 2005).

The efficiency and productivity of water use are important considerations for sustainability. The ‘supply-side’ approach has been the basic paradigm of water services throughout the industrialized world for much of the 20th century (Gleick, 2000). The primary concern of the supply-side approach is to secure sufficient water to meet forecast demand.

Demand management strategies include economic, socio-political and physical measures that change behaviour and practices to increase water use efficiency and productivity (Tate, 1990). This can include changes in technology, production practices and policies or programmes to encourage such changes.

In the context of governance decision making, efficiency means using social and institutional resources such as money, time and energy required in decision making as efficiently as possible. The goal of institutional efficiency is to ensure that decision-making processes produce the desired outcomes without waste of resources (World Meteorological Organization, 2009).

➤ Accountability and Transparency

According to Merriam-Webster Online (2008), to be transparent is to be clear – free from pretence or deceit, readily understood and characterized by visibility and accessibility of information. Accountability, again from Merriam-Webster Online (2008), is defined as an obligation or willingness to accept responsibility for one's actions. Together, achieving transparency and accountability ensures that all actors in water governance understand how decisions are made (World Meteorological Organization, 2009: 3-6).

Criteria for assessing transparency and accountability include clearly defined terms of authority and responsibility; defined decision-making rules; adherence to those rules (i.e., respecting rule of law), effective sanctions for instances of abuse; and, convenient and timely access to information (Dale, 2001; Lundqvist, 2004; Capistrano et al., 2005) While improved transparency and greater accountability are among the purported benefits of more distributed or decentralized governance, that result is not guaranteed. As Cohen and Davidson (2011: 523) note, “Outside of elected officials, the challenges surrounding accountability speak to the question of delegating decision-making authority to non-elected parties, as a watershed approach typically includes extra-governmental participation.

Accountability concerns – particularly with respect to extra-governmental participation in decision-making processes – are often related to the broader question of legitimacy.” Indeed, water governance researchers raise a number of questions regarding transparency and accountability in distributed governance systems, including the following:

- Are responsibilities being devolved that should properly be undertaken by state agencies?
- Is it possible to connect decisions and actions taken at local levels to higher level

(provincial and federal) institutions and democratically elected officials (i.e., responsible Ministers)?

- Are decisions and actions adhering to statutory requirements (i.e., rule of law)?
- Where multiple state and non-state actors are involved in collaborative decision making, is it clear who has responsibility for what?

(Lundqvist, 2004; de Loë, 2005; Nowlan and Bakker, 2008)

In analyzing decentralized, multi-layered water governance in Sweden, Lundquist (2004: 421) observed both lack of clearly defined terms of authority and responsibility, and concerns related to democratic accountability. These observations are not an argument against decentralization but rather evidence that local governance must be compatible with and bounded by authority and power at higher jurisdiction levels (Lundqvist, 2004: 414). This perspective is consistent with the discussion of relationship between harmonization and subsidiarity in water governance.

Transparency and accountability require that information be readily available to and directly accessible by those affected by decisions and, ideally, in forms easily understood by non-experts (UNESCO, 2003; Capistrano et al., 2005). The information being used in decision making often goes beyond 'expert science' to include other forms of knowledge, such as local and traditional knowledge (Sampford, 2002; Schofield and Burt, 2003; Capistrano et al., 2005)

➤ Participation and Collaboration

Increased participation by non-state actors and by the public in policy development, planning processes, and day-to-day management is a fundamental element of decentralized,

polycentric governance systems (Nowlan and Bakker, 2008; Booher and Innes, 2010). Participation is one means of satisfying equity issues by seeking to ensure that all those affected by decisions and the resulting outcomes have a say. Effective participation requires that all affected parties have a voice, either through intermediate organizations that legitimately represent their interests or via direct participation, and that all interests are represented within a governance system (Costanza, 1998; Syme et al., 1999: 60; UNESCO, 2006).

Participation can take many forms, and can mean different things to different people (Huitema et al., 2009; von Korff et al., 2010). Similarly, Booher and Innes (2010) note that collaboration can encompass many types of cooperative efforts among two or more groups of individuals or organizations. Making the connection between the two, Huitema et al. (2009: 5) use the term 'public participation' to describe collaboration between governmental and non-governmental stakeholders.

Booher and Innes (2010: 4) provide a more elaborate explanation of collaboration, which they refer to as processes in which "individuals representing differing interests engage in long-term, face-to-face dialog, seeking agreement on strategy, plans, policies, or actions." Collaborative processes may be established in a number of ways: by government agencies or legislative bodies seeking to address often intractable problems; by developers, environmentalists, and other private actors frustrated by conflict or stalled decisions; or by community or group of resource users seeking to better manage use of a limited, common resource, such as a local water users association (Booher and Innes, 2010).

Mitchell (2002), discusses three potential stages of planning at which to engage the public in participation – normative (determining what ought to be done); strategic (determining what can be done) or operational (determining what will be done). These stages are often iterative rather than following a sequential, one-way path. While most often participation occurs at the operational stage, it is widely agreed that participation should be encouraged at the earlier strategic and normative stages to avoid the perception that participation is merely tokenism (Mitchell, 2002: 190).

According to Cortner and Moote (1999), including broad perspectives at the goal definition stage will increase the legitimacy and acceptability of both the process and outcomes.

von Korff et al. (2010) propose seven overarching design principles for participatory decision-making processes:

- See the participation process as an opportunity for effective decision making and not as a constraining obligation;
- Consider the input of the stakeholders during design and implementation;
- Encourage inclusive and appropriate stakeholder involvement, seeking balance between inclusiveness and efficiency of the process;
- Clearly define the roles and responsibilities of the lead agency and of the participants.
- Respect political realities – the main decision makers, which may not necessarily be the lead agency, need to be identified and must remain responsible for the final decision even if they choose to delegate this responsibility.
- Meet the needs of the stakeholders and context by including stakeholders in problem framing and design participation mechanisms (e.g., meetings, conference calls, discussion forums) to meet the needs of participants, and providing participants with

the means (e.g., knowledge, financial resources, opportunities) to engage effectively;
and,

- Always remain open to adjusting the process design to respond to changes in context, new knowledge, or uneasiness among stakeholders.

➤ Integration

The concept of integration as it relates to water governance specifically, can serve as a means for addressing fragmentation among many policies, programmes, actors and institutions involved in decision making (Gibson et al., 2005).

Integration is defined as “having all parts combined into a harmonious whole” (World Meteorological Organization, 2009). It does not mean consolidation under a central authority, but rather, coordination and coherence among actors and institutions and across temporal and spatial scales (Dryzek, 1987). Coherence ensures a logical connection among various actors and their initiatives in terms of being “united in principles, relationships, or interests” (Merriam-Webster, 2008; World Meteorological Organization, 2009). In a coordinated and coherent governance system, each part recognizes linkages with others and seeks to harmonize all participants’ activities to promote an efficient, effective and equitable approach to achieving overall goals and objectives (Dale, 2001: 134).

Kemp et al. (2005: 19) note that the goal of integration is not to create a single body or a single policy dealing with everything; rather, “effective integration for practical decision making centres on acceptance of common overall objectives, coordinated selection of policy options, and cooperative implementation designed for reasonable consistency.” Evidence of integration includes coordination among government policies and initiatives of other governance actors, coherence defined in terms of broadly common goals, objectives, rules

and priorities, and clarity in terms of spatial boundaries, authority, roles and responsibilities (Lundqvist, 2004; Kemp et al., 2005).

A key means of achieving effective integration is building or enhancing capacity through partnerships and networks that create horizontal and vertical linkages among agencies and organizations (de Loë, 2005).

Mitchell (2009: 7) stresses that “integration is a means to an end, not an end to itself. As a result, use of integration in water governance should be preceded by a vision of a desired future condition or state. Without such direction, it is difficult to determine which parts need to be made into a whole, who should be working together to arrange proper order and relationships, and what logical connections need to be realized.” It is also important to realize that integrated approaches do not necessarily come without costs in terms of financial, human and other resources; thus, there may be trade-offs including ones between integration and efficiency in governance (Young, 2002).

The foregoing review indicates that to achieve effective water governance, it is necessary to create an enabling environment which facilitates efficient private and public sector initiatives. This requires a coherent legal framework with a strong and autonomous regulatory regime. It must however be noted that achieving effective water governance cannot be undertaken hastily using blueprints imported from overseas; it needs to be developed to suit local conditions with the benefit of lessons learned from all over the world (McGranahan and Satterthwaite, 2004)

2.4 Decentralization and Water Governance

The tradition of state-led, command-and-control regimes is giving way to models based on decentralized decision making and participatory planning involving state and non-state actors, including water users, environmental organizations and citizens (Dale, 2001; Folke, 2003; de Loë, 2005; de Loë and Kreutzwiser, 2007).

In simple terms decentralization refers to the transfer of responsibility for planning, management and resource allocation to local level agencies. This transfer helps to overcome many of the problems of decentralized service provision. Decentralization is aimed at improving efficiency, equity and sustainable resource use, principally by reducing the distance between the decision makers and beneficiaries (Bwalya, 1992 quoted in Mtisi, *et al*, 2003)

The benefits of decentralization are perceived by its advocates as including the enhancement of political participation by local civil society actors and the provision of local government that is more responsive and accountable to citizens' and their needs. Therefore, in theory, decentralization provides a synergistic context in which to implement the 'two-pronged strategy' of a rights-based approach at the local level, that is, empowering rights-holders (local civil society) to invoke their rights and strengthening duty-bearers (local state institutions) to fulfill their objectives (Ljungman 2004: 7).

It can therefore be said that decentralization has become a preferred policy option for nations and states to re-organize their systems of government to promote participation in development which represent the best option for poverty reduction.

2.5 Water Services Delivery

Jacomina (2005) in his paper titled “Water in rural communities” notes that supplying water to communities is not a simple issue. He further notes that communities have a significant role to play in managing the delivery of water services. Again, the complexity and cost of water services require new roles for government, civil society, the private sector, and donors as well. This implies that water services delivery involves multiple stakeholders.

The experience of the World Bank and other donors has shown that a community driven development – referred to as the demand responsive approach – results in more equitable and efficient management and a greater likelihood that water points will be maintained, user fees will be collected, and water services will be sustainable (World Bank, 2002). The implication here is that demand-driven approach to water service delivery is more effective and any attempt to supply water to rural communities should take cognizance of this approach.

2.6 Institutions Governing Water Services in Ghana

North (1993) describes institutions as ‘the humanly devised constraints that structure human interaction. They are made up of formal constraints (e.g. rules, laws, constitutions), informal constraints (e.g., norms of behaviour, conventions, self imposed codes of conduct), and their enforcement characteristics.

Wegerich (2001) argues that institutions are social resources that determine relations of individuals, groups and organizations. Saleth and Dinar (2005) define water institutions as agencies that put ‘rules that together describe action situations, delineate action sets, provide incentives and determine outcomes both in individual and collective decisions related to water development’

There are a number of agencies in Ghana that provide and regulate water under statute law. However, the most important ones are as follows:

2.6.1. The Ghana Water Company Limited

Reforms in the urban water sector included a Water Sector Rehabilitation Project that began around 1995. Subsequent to the rehabilitation programme, further reforms have been undertaken, and are intended to create conditions (through legal, business and regulatory interventions) to facilitate a favourable environment for increased private sector participation. Ghana Water and Sewerage Corporation (GWSC) was also in July of 1999 legally converted to a limited liability company, Ghana Water Company Limited (GWCL), as one of the many steps for introducing the private sector to the management and operation of urban water supply systems.

By practice and orientation, Ghana Water and Sewerage Corporation (GWSC) has concentrated on the provision of water services in urban areas. The GWSC was set up in 1965 as a public corporation. Under the GWSC Act 1965, GWSC has authority to provide, distribute and conserve water for domestic, public and industrial purposes (section 4 of GWSC Act 1965, Act 310). It has power to make long term plans for the provision of water in Ghana. It has authority to conduct research into water issues. Under LI 1233, it has enacted regulations through which water and sanitation facilities can be made available to Ghanaians. These regulations are meant to protect the environment as well as natural watercourses (Halcrow Consultancy Report 2000).

2.6.2 The Community Water and Sanitation Agency

Community Water and Sanitation Agency (CWSA) was established by an Act of parliament, Act 564 in December 1998 with the mandate to facilitate the provision of safe drinking water and related sanitation services to rural communities and small towns in Ghana (Community Water and Sanitation Agency (CWSA), 2007a). The CWSA has since been facilitating the implementation of the National Community and Sanitation Programme (NCWSP) using the decentralized structures at the district and community levels as prescribed in the Act.

The institutional arrangements include all levels of government, NGOs, communities, and the private sector to provide and co-manage services (Jacomina, 2005). The basic unit is the village, which forms a gender-balanced Water and Sanitation (WATSAN) committee. This committee is in charge of raising the initial community contribution to construction costs, and is responsible for the maintenance and operation of the water and sanitation systems. The committees work in close coordination with the district assemblies, which form the District Water and Sanitation Teams (DWST) that coordinate, supervise, and promote the project developments in the communities. Moreover, the Regional Water and Sanitation Team (RWST) is responsible for implementing the Community Water and Sanitation Project (CWSP) in the region and it provides technical assistance to the District Assemblies. Community Water and Sanitation Agency (CWSA) is the overall primary responsible body, which guides, promotes, and monitors project activities (CWSP Implementation Manual, 1996).

The Community Water and Sanitation Agency Act (Act 564) has as its object, the establishment of the Community Water and Sanitation Agency (CWSA) to take charge of the delivery of water services in rural communities. It collaborates with the Water Resources Commission, the Environmental Protection Agency, the Ghana Water Company Limited and

other public and private bodies that are involved in the provision of water services to rural communities in Ghana. Since District Assemblies are responsible for ensuring that adequate and wholesome water is provided in the districts, the Community Water and Sanitation Agency (CWSA) supports District Assemblies in promoting sustainable safe water services in rural communities. It also supports district assemblies to encourage the participation of communities in the management of water services. The Community Water and Sanitation Agency (CWSA) works in close collaboration with District Assemblies.

2.6.3 The Water Resources Commission

The Water Resources Commission Act abolishes the pre-1996 customary regime for ownership of water which resided in stools, communities, families and individuals. In their stead, the State has assumed ownership, management and control of water through the establishment of a multi-institutional sectoral body, the Water Resource Commission (WRC).

The Act has as its object, the establishment of a Water Resources Commission (WRC), to provide for its composition and function and the regulation and management of the utilization of water resources in Ghana and related matters. In consonance with its objects, the Act establishes a WRC, a body corporate charged with the responsibility for the regulation and management of the utilization of water resources and for the coordination of any policy in relation to them. As a supplement to the WRC Act, the Government has adopted a water policy based on integrated water resource management, in order to achieve a sustainable management of the country's water resources in consonance with the principle of sustainable development (Boateng, 1997).

2.6.4 Other stakeholders

The Ghana Coalition of NGOs in Water and Sanitation (CONIWAS), created in 2001, "works in partnership with sector players to influence policies, remove barriers and promote access to potable water for the poor and vulnerable." According to the coalition, giving NGOs one voice for advocacy and lobbying has been one of its major benefits.

2.7 Challenges in Water Governance

Below are the identified challenges in water governance:

2.7.1 Stakeholder participation

In the water Sector, the boundaries of consent are shifting, through increased stakeholder participation in decision-making. It is clear, however, that the size of the population in large villages or municipalities is such that it precludes the direct participation of all stakeholders in decision-making. The question of who will represent large groups of stakeholders is a highly political one. The relationship of the people participating in any multi-stakeholder process to their constituents is problematic, especially when third parties are involved. It is a nostrum of development work that third-party facilitators (researchers, consultants, NGOs) are needed to identify, mobilize, organize and inform stakeholder groups (Wester et al, 2003). But, as pointed out by Edmunds and Wollenberg (2001), the relationship of a representative to his/her constituency is perhaps most politically charged when representatives of a group are designated by outsiders or are accountable to them, as is often the case in multi-stakeholder negotiations.

2.7.2 Pro-poor governance

Cleaver et al (2006) state that the consensus on the desirability of good governance implies that there is also a consensus that it will lead to 'good outcomes'. Despite a plethora of case

study documentation of good practice, this consensus masks a lack of enquiry and understanding as to how governance works out in practice and how outcomes are achieved. What processes are involved in the relationship of the various systems of governance? How do they lead to the delivery of water services? What do we mean by ‘good water governance’ and how can we be sure that ‘good governance’ leads to ‘good outcomes’? There is, as yet, little understanding of the importance of localization and contextualization in how governance systems evolve, and how these result from precedent, the environment and local practice. There is also little understanding of how water governance systems impact on the lives of individual citizens, and little effort to differentiate the impact on the lives of poor people, yet this is of particular importance in the context of the MDGs and the emphasis on the eradication of poverty

2.7.3 Role of experts

Traditionally, water experts have seen their role to determine what the public, and the environment, need; to determine the best means of satisfying those needs; and then to implement that optimum solution. If the final decision was made by politicians, and water experts tended to define any variation on their preferred solution as a result of ‘politics’, as inherently bad and irrational, then experts expected that the decision would be very largely based upon their analysis. The stakeholder engagement model means that instead the role of water experts becomes a supporting role, of helping the stakeholders to discover what the implications of the different options are, and to aid them in inventing new options. In turn, this raises the questions of what tools and techniques are required by the stakeholders to help them in their task (Green, 2007).

2.7.4. Democratization of water services

Increasingly water is a politically contested resource and, as a result, water institutions and policies are effects of political practices (Wester et al, 2003). Thus, institutions are not seen simply as “the rules of the game” (North, 1990) but as embedded in practice where they are reproduced, transformed and subverted through interactions and negotiations between actors (Cleaver, 2000).

First, there are important contrasts among developing countries in how they go about crafting new policies and implementation arrangements. On one extreme, one finds a top down, almost entirely bureaucratic approach, driven by government agencies as the major stakeholders. In these cases, the process is essentially driven by a combination of technical and economic concerns and interagency politics.

There is no room in such approaches for less organized, “informal” interests, especially poor people, to participate and gain access to water. In countries characterized by large groups of voiceless poor people, such an approach is unlikely to lead to overcoming water deprivation as a central element of poverty and will see the continued dependence of the poor on the random goodwill of the state.

2.8 The Concept of Community Management

Over the last few decades Community Management has become the leading concept in rural water supply. It started with community involvement in system construction and developed into community participation and community management. In the process the responsibility for service provision gradually moved from national government to local people.

The theoretical frameworks that underpin community management differ widely from neo-liberal perceptions on reduced state involvement, to water as a basic human right, to water as an economic good, to people first and empowerment approaches. For most water supply, community management now is the guiding principle. Implementing management institutions and capacities is common practice and a whole range of (participatory) methods have been developed to do so (Appleton and Evans, 1993).

A guiding principle in the achievement of Agenda 21 is: “Community management of services, backed by measures to strengthen local institutions in implementing and sustaining water programmes”. The activity list includes numerous measures to bring about effective community management as shown below:

- Encouragement of water development and management based on a participatory approach, involving users, planners and policy makers at all levels
- Application of the principle that decisions are to be taken at the lowest appropriate level, with public consultation and involvement of users in the planning and implementation of water projects
- Support and assistance to communities in managing their own systems on a sustainable basis
- Encouragement of the local population, especially women, youth, indigenous people and local communities in water development
- Linkages between national plans and community management of local waters
- Integration of community management within the context of overall planning

(Source: <http://www.irc.nl/manage/whatisit/history.html>)

The Community Based Management approach through which local representatives are constituted to take full responsibility for Operation and Maintenance (O&M) of water facilities has now become the crux of rural and small towns water supply and management in Ghana, instituted through a number of policy reforms after a series of experiments by the World Bank, Canadian International Development Agency (CIDA) and other international water agencies (Kendie and Abane, 2001).

In the context of this special study, the above concepts are used to mean the following:

Governance refers to the process of steering, directing and controlling the affairs of society. It has as its bedrock broad base participation of all stakeholders (those concerned with and are affected by decision making)

Water Governance involves the range of political, cultural and administrative systems that are in place to develop and manage water services at different levels of society.

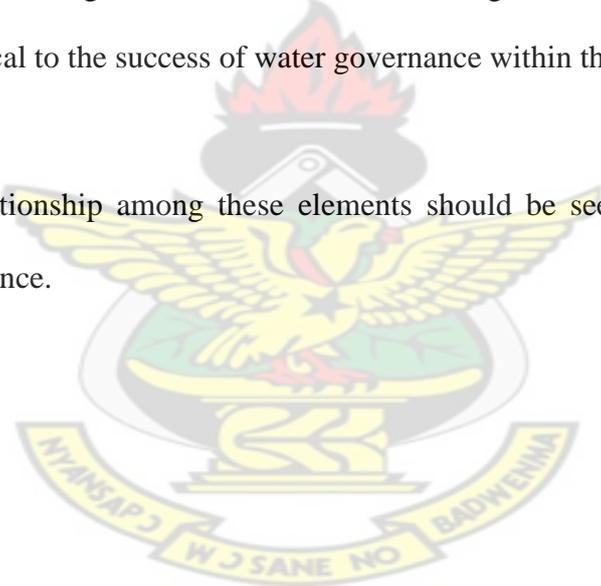
Water Services are those services that contribute to effective development and management of water through the involvement of the community.

Water Resources refer to all forms of water sources including rivers, streams, wells, boreholes and piped water which contribute to human well-being and aquatic life.

Community Management is the process where the communities assume the responsibility of managing water services and maintaining their water facilities.

The linkages among the above constituents are that good governance is a prerequisite for the development of water services in the country. When good governance is introduced into water service development, there would be effective water governance and sustainability of water services. The sustainability of water services is dependent on governance structures as well as the interactions among the structures. Effective water governance is linked to governance in society at large. Water governance cannot therefore be isolated from development in society at large. Governance systems (political, cultural and administrative systems) as they prevail in a locality set the parameters and create the windows of opportunity for achieving effective water governance. Good governance at the local level is a precondition to resolve water governance issues. The role of governance mechanisms outside the water sector is critical to the success of water governance within the water sector.

In conclusion, the relationship among these elements should be seen as key to achieving effective water governance.



CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter outlines the general plan of this study. It specifies the sources of data collection, the description of population and sample, sampling design procedures and the instruments that were used in the collection of data. It further presents the methods that were employed in the analysis of data.

3.2 The Research Design/Approach

The research design adopted for this study was centred on the Case Study approach. It is a method of careful and critical inquiry or investigation and examination seeking the facts of a case, a problem, an issue, a community among others (Kumekpor, 2002).

3.3 Target Population

The study was carried out at selected communities in the Sekyere Central District of Ghana. The communities are Kwamang, Nsuta, Beposo and Atonsu. The sampling frame consisted of community members (household heads) and institutions that are involved in water governance. These institutions included the District Assembly (DA), Water and Sanitation Committee (WATSAN), Unit Committees, District Water and Sanitation Team (DWST) and the Traditional Leaders and other institutions involved in water governance.

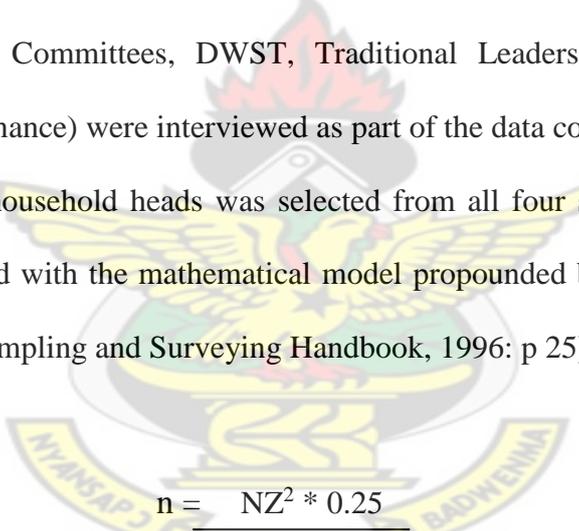
3.4 Sampling

Enumeration of any kind involves resources, time and organization which in most cases are beyond the means of the researcher concerned. However, by concentrating resources on only

a part of the population, the quality of data collection may be superior to and guaranteed than that of a complete enumeration (Bailey, 1982).

In view of this, the study adopted a purposive sampling methodology to select the institutions involved in water governance. This sampling enables the researcher to focus on the particular characteristics of the population that are of interest, and also to answer the research questions. Again, probability sampling method was used to select the household heads in the Sekyere Central District. The use of probability sampling means that every household head in the study area has an equal chance of getting selected. Also, to be selected for interview were WATSAN members from each of the communities. In addition, key officers of the following institutions (DA, Unit Committees, DWST, Traditional Leaders and other institutions involved in water governance) were interviewed as part of the data collection activity.

A sample size of 147 household heads was selected from all four study communities. The sample size is calculated with the mathematical model propounded by the Air University of USA (Air University Sampling and Surveying Handbook, 1996: p 25).


$$n = \frac{NZ^2 * 0.25}{[d^2 * (N-1)] + [Z^2 * 0.25]}$$

Where, n =sample size, N =sample frame (Household Heads), d =precision level, Z =no. of standard deviation units corresponding to confidence level. (See Appendix E for the calculation of sample size)

The household heads were interviewed by means of probability sampling method. Owing to the varying levels of the population figures for each of the four (4) communities under consideration, the sample size was shared among the four (4) communities based on the proportionate size of population for each community.

Mathematically, the four communities namely Atonsu, Beposo, Kwamang and Nsuta shared the sample size based on the ratio; 1:2:3:4 and their corresponding population figures are 2,743, 6,518, 7,826 and 8,937 respectively. Therefore, the numbers of questionnaires administered in the four (4) named communities are 15, 29, 44 and 59 for Atonsu, Beposo, Kwamang and Nsuta respectively

3.5 Data Sources

The study employed both primary and secondary data. The primary data was obtained from the field using instruments like interview schedules, questionnaires and observation guide (non-participant observation). The questionnaires were used to obtain data at the household level whereas interview schedules were used to obtain data from WATSAN Committees, DWST, Unit Committees, Traditional Leaders and the District Assembly. The secondary sources included both published and unpublished reports on topics relating to the subject matter under investigation.

3.6 Method of Data Collection

Data was both qualitative and quantitative. The data required for the study was obtained through interviews granted with the Household Heads as well as District Assembly Staff, DWST, Unit Committees, Traditional Leaders, the WATSAN Committees and other institutions involved in water governance. Structured and semi structured questionnaires as well as interview guides were used to gather the necessary primary data for the study. Observation was also employed to complement the primary data collection. All interviews were 'face-to-face'. In addition, a consent form was provided explaining in details the objectives and relevance of the study assuring the respondents of anonymity.

3.7 Method of Data Analysis

The Qualitative data was analysed using Thematic Analysis which is a method for identifying, analyzing and reporting patterns (themes) within data while quantitative data was analysed using descriptive statistical analysis. The software which aided this analysis was the Statistical Package for the Social Sciences (SPSS). Data was analysed in line with the research objectives.

3.8 Profile of Study Area

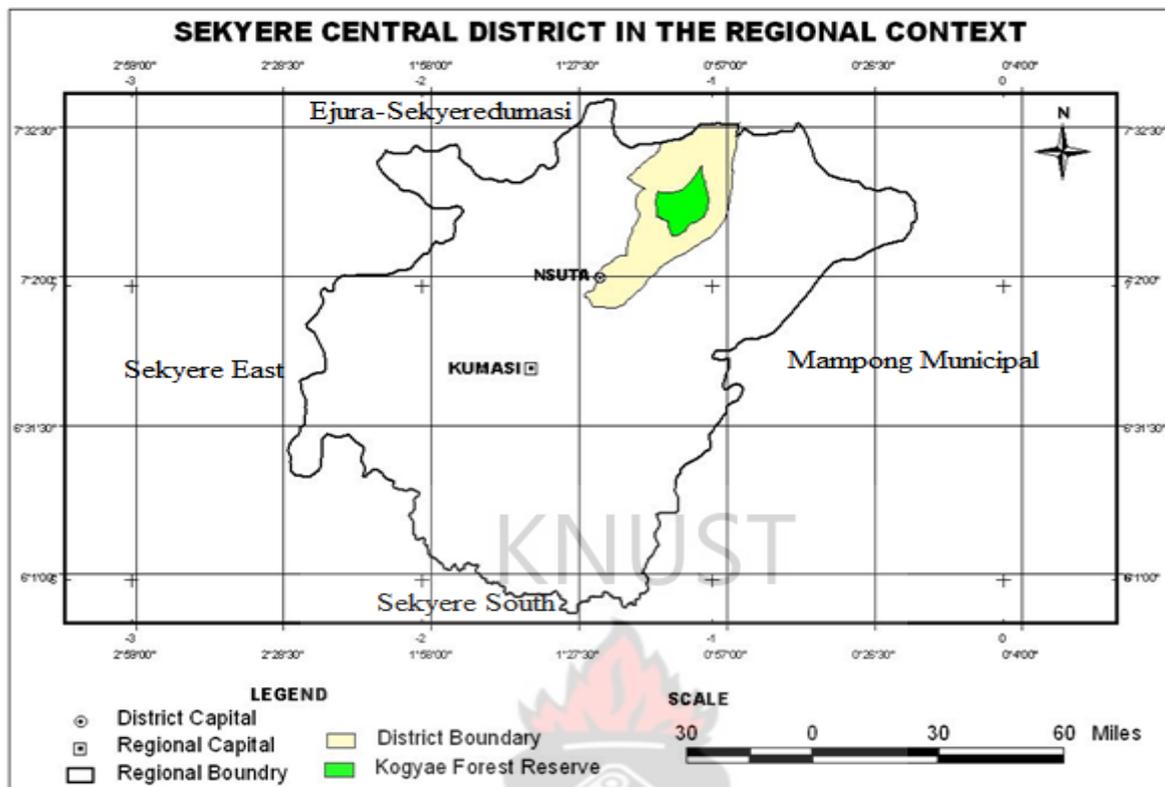
This aspect of the study looks at the geo-physical characteristics, the demographic characteristics, the social characteristics as well as economic development issues in the District. These have been discussed with reference to the relations that they have on the topic of study.

3.8.1 Physical Characteristics

- Location and Size

Sekyere Central District, which is one of the 27 Administrative Districts in the Ashanti Region of Ghana, is located to the northern part of the region, and shares boundary with Mampong Municipal, Atebubu District, Sekyere East, Sekyere South, and Ejura-Sekyeredumasi to the west, east, south, and north-west respectively. The nearness of the District to other districts, especially Ejura and Atebubu deprives the district from revenue generation. This is because communities in the Aframplains portion of the district find it convenient in accessing markets in these districts. The District covers a total land area of about 1,564km² and has about 150 settlements. Figure 3.1 below shows Sekyere Central District in the regional context

Figure 3.1: Sekyere Central District in the Regional Context



Source: Sekyere Central District Development Plan, 2002-2005

- Climate

The District has an average annual rainfall of 1270mm and two rainy seasons. The major rainy season starts in March with a major peak in May. There is a slight dip in July and a pick in August tapering off in November. December to February is dry, hot and dusty.

The average temperature in the District is about 27 degrees Celsius with variations in mean monthly temperature ranging between 22 degrees to 30 degrees Celsius throughout the year.

- Water Sources

The most common sources of water used in the District are Rivers, streams, Hand-dug Wells and Boreholes. They are however, easily polluted and therefore a source of worry since they could be sources of many water borne diseases.

Pipes lines are being laid by the Ghana Water Company Limited to Nsuta to access Water from the Mampong Station but it is not regular and hence unreliable.

3.8.2 Demographic Characteristics

- Population Size and Growth Rate

The District's population for 2010 was projected to be 74,921 using a projected growth rate of 1.3%. The 2000 figure was used in projecting the 2010 population on the assumption that all things be equal, the growth rate for the 10 years period is 1.3%.

- Age and Sex Composition

According to the 2000 Population and Housing Census, females out-numbered the males in the District. From the census, the females formed 51.3% of the total population whilst males constituted 48.7% with age-dependency ratio of 1:0.7. According to the District Statistical Office, this trend is expected to remain unchanged through the Plan period i.e. 2009-2012.

3.8.3 Economic Development

- Agriculture

Agriculture is the predominant economic activity which engages about 60.8% of the labour force and constitutes the main source of income for the people in the district. Some of the major food crops produced in the district include cassava, maize, yam, plantain, cocoyam, cowpea, groundnuts, onions, carrots, tomatoes, garden eggs, cabbage, oil palm, cocoa, citrus, teak and cashew plantations.

- Industry

The industrial sector employs about 29.6 percent of the labour force. The types of industry in the district can be categorized into four main groups namely textile based industry, agro based industry, craft industry and the service industry

- Economic and Financial services

The district has a number of economic and financial services or infrastructure facilities which are vital for the development of the district. They include banking institutions, petrol filling stations and market infrastructure.

KNUST



CHAPTER FOUR

WATER GOVERNANCE IN RURAL COMMUNITIES

4.1 Introduction

In this Chapter, the data collected from the field have been analyzed and discussed in order to find answers to the research questions and also achieve the objectives of the research. These analyses and discussions are of great importance in terms of adding to the body of knowledge on water governance issues in the Sekyere Central District of Ghana.

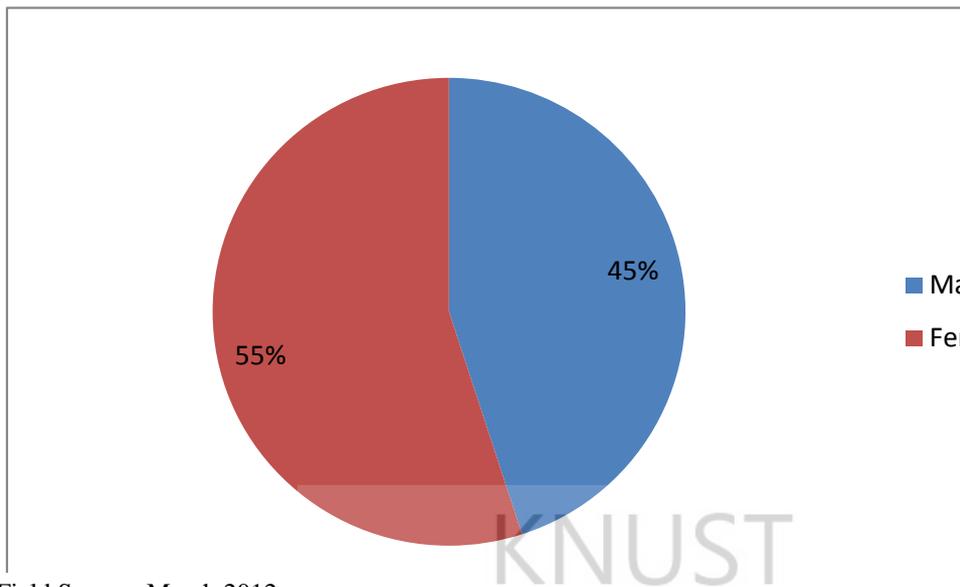
4.2 Analysis of Household Data

A total number of 147 household heads were interviewed which involved men and women with different occupational and educational backgrounds. The ages of respondents ranged between 19-60 years. It must be stressed here that there were focus group discussions held in the communities in order to validate the responses received at the household level.

4.2.1 Sex Composition of Household Respondents

The research involved a total number of 66 men and 81 females. The percentage figures are represented in figure 4.1 below. The research revealed that women in most cases answered questions with eagerness because, for them any time there is water crisis, they are the most affected ones as compared to men.

Figure 4.1: Sex Composition of Household Respondents

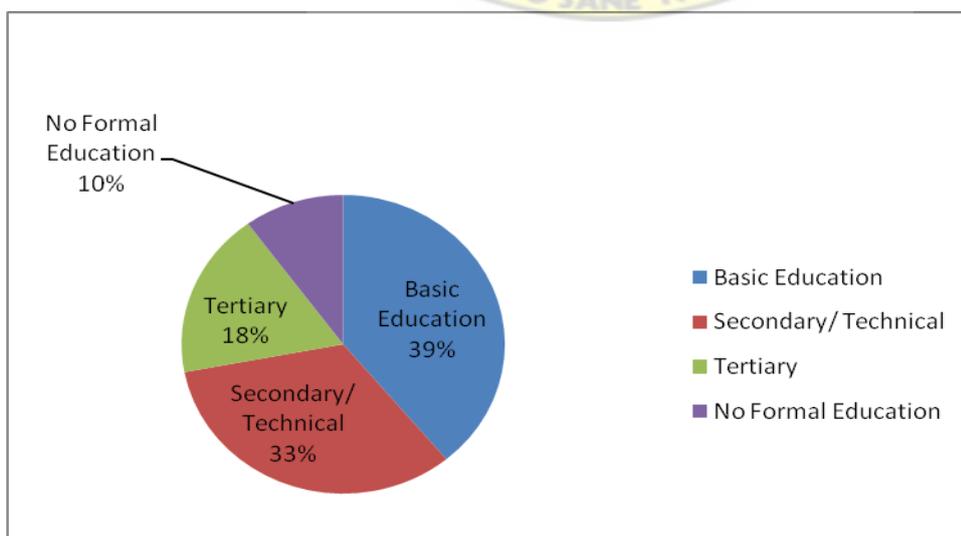


Field Survey, March 2012.

4.2.2 Educational level of Household Respondents

In all, four categories of educational levels were captured in the survey. These are basic education, that is, those who have been educated from primary up to the JSS level; secondary, or technical/vocational and tertiary which refers to all degree and diploma holders. Figure 4.2 below presents the educational background of household respondents.

Figure 4.2: Educational Level of Household Respondent



Field Survey, March 2012.

Figure 4.2 shows that about 39 percent of the household respondents had received basic education. About 33 percent however indicated that they had received secondary/technical or vocational education whilst only 18 percent had received education up to the tertiary level. However, about 10 percent also indicated they had no formal education at all.

4.2.3 Types of Water Sources and Means of Access

Various sources of water including rivers, streams, boreholes, rain water and wells exist in the rural areas. The study revealed that, water is treated as a common good and is accessed by everyone free of charge unless the source belongs to an individual such as a household well or community borehole.

Beposo Community

It was realized that there was no borehole in Beposo. They resort to the use of rivers/ streams. In this community, only 1 percent of the inhabitants buy from private sources (i.e. private individuals who supply to these communities) at a price of 50 pesewas per gallon. It was also revealed that about 75 percent of the community members do not treat their river/ stream water use.

Atonsu Community

Majority (98%) of the inhabitants resort to the use of boreholes, wells and rivers/streams in this community and about 2 percent of the populaces buys water from the private sources(i.e. private individuals who supply to these communities) at a price of 50 pesewas per gallon.

In addition, about 87 percent of the people do not treat their water before using for both domestic and commercial purposes.

Kwamang Community

The study revealed that about 1 percent of the people in this community buy their water from the private sources (i.e. private individuals who supply to these communities) at a price of 50 pesewas per gallon and about 92 percent of the people do not also treat their water before use. The main sources of water used by this community include wells, boreholes and rivers/streams.

Nsuta Community

The research indicated that about 99 percent of the inhabitants in Nsuta community resort to the use of boreholes, wells and rivers/streams. Only 1 percent of the people also resort to the use of private sources (i.e. private individuals who supply to these communities) at a price of 50 pesewas per gallon. In addition, about 65 percent of the people do not treat their water before using for both domestic and commercial purposes.

4.2.4 Ownership and Management of Water Resources and Water Facilities

Beposo Community

All the household respondents at Beposo community confirmed that water is a gift from God and owned by everyone in the community. The study shown that, 80 percent of the populaces are of the view that the government must repair boreholes for the communities in the district. They however stated that in the past, government would drill a borehole without engaging or involving the beneficiaries. On the other hand, 20 percent of the people indicated that the communities must be involved in the repairs and maintenance of water facilities.

Atonsu Community

About 40 percent of the household respondents in Atonsu community indicated that, there is the need for the community to be more engaged in the management and repairs of broken water facility in the community. Whilst the remaining 60 percent stated that, the government must repair and provide for the community their water needs.

Kwamang Community

The study revealed that, about 30 percent of the household respondents in this community welcomed the district to come to their aid as they will also contribute their quota in the provision of water to their community and play their respective roles in its management.

Nsuta Community

All the household respondents in Nsuta community indicated that water is a gift from God and therefore, there is the need for everyone to enjoy that gift. About 15 percent of the respondents are of the view that community members must contribute in the provision, maintenance and management of water facilities while the remaining 75 percent believes the government should take sole responsibility in the provision of water services to the community.

4.2.5 By-laws, Traditional Beliefs and Customs

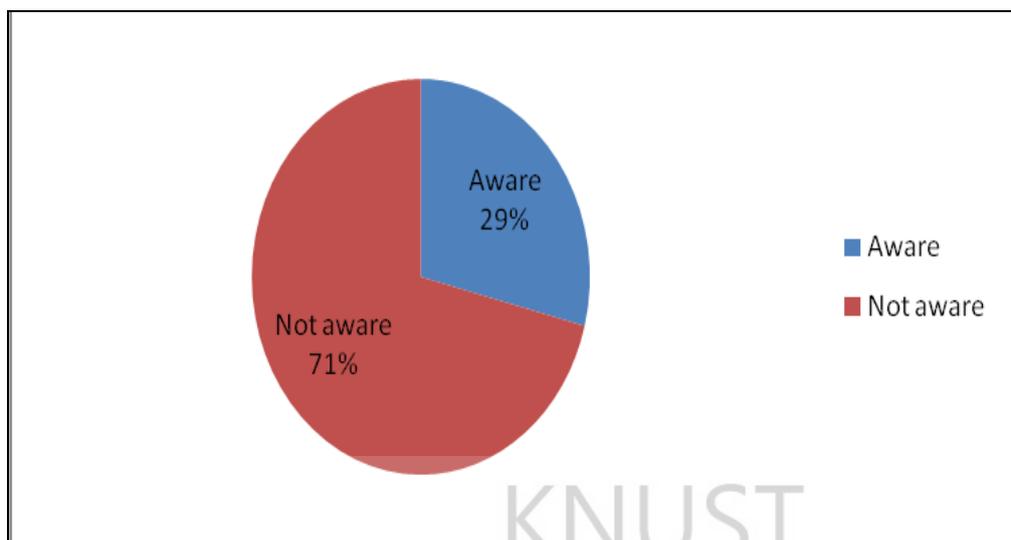
About 29 percent of household respondents in all the four communities under study indicated that the by-laws were rarely revised. In case something serious happens that necessitates a revision of the unwritten by-laws, the Watsan Committee summons a village meeting to announce the changes. With regards to traditional beliefs and customs, the study shown that majority (98%) of the household respondents in all the four study communities namely

Beposo, Atonsu, Kwamang and Nsuata previously had strong beliefs in the traditions and customs relating to the protection and management of water resources and facilities. However, it was indicated that these traditional beliefs and customs were currently not being respected and followed since now traditional beliefs and indigenous knowledge are considered as primitive.

4.2.6 Awareness of Water Related Laws

Majority (71%) of the household respondents in Beposo, Atonsu, Kwamang and Nsuta communities indicated that water could be used for any purpose (both domestic and commercial) without the need to get a water right from the Water Resources Commission (government). As noted earlier on, the Water Resources Commission Act stipulates that any person has the right to use water without a water right for domestic purpose only. This means that for any use other than domestic one has to obtain a water right from the Water Resources Commission. About 71 percent of household respondents in all the four communities during the research, as shown in figure 4.3 below indicated that they were not aware of this legal requirement. They further indicated that they were also not aware that they could only claim ownership of the water works or facilities if they were legal persons or entities.

Figure 4.3: Awareness of Water Related Laws



Field Survey, March 2012

4.2.7. Performance of Community Roles in Water Service Provision

On the issue of the performance of community roles in water services provision as enshrined in the CWSA Act (Act 564, 1996), about 74 percent of the household respondents in all the four communities under investigation as shown in table 4.1 below indicated that they do not perform these roles enshrined in the CWSA Act. This is happening because they are not aware of the performance of these roles. The remaining 26 percent indicated that with the exception of monitoring and evaluation all other roles are being performed. They further stated that they contribute GH¢50 as an annual levy for operation and maintenance (O&M) and also pays 25 pesewas per bucket of water for O&M.

Table 4.1: Performance of Community Roles in Water Service Provision

Response	Number of Household Respondents	Percentage
Performance	38	26
Non-performance	109	74
Total	147	100

Field Survey, March 2012

4.2.8 Measures to Ensure Effective Water Governance at the Local Level

All the respondents interviewed in all the four study communities stated that, there is the need to put measures in place to ensure effective water governance at the local level. Table 4.2 below summaries the level of agreement or disagreement stated by the respondents on the factors which ensure the sustainability of water facilities.

Table 4.2: Factors affecting the Sustainability of Water Facilities

No	SUSTAINABILITY FACTORS	RESPONSE							
		Strongly Agree		Agree		Disagree		Total	
		No.	(%)	No.	(%)	No.	(%)	No.	(%)
A	SKILLS AND ABILITIES								
1	Technical skills to maintain water facilities	119	81	28	19	-	-	147	100
2	Administrative skills required to collect revenue, maintain bank accounts, keep books and make payment for services	111	76	36	24	-	-	147	100
3	The ability to build consensus and resolve conflicts within the community and between leaders required	97	66	50	34	-	-	147	100
B	PUBLIC AWARENESS								
4	Public awareness to ensure the full benefit of the service through activities like hygiene and health education	111	76	36	24	-		147	100
5	Awareness of civil responsibility	104	71	38	26	5	3	147	100
C	ECONOMIC FACTORS								
6	Revenue flow to cover the recurrent cost of maintenance	101	70	43	28	3	2	147	100

Source: Author's field survey, March, 2012

From table 4.2, it could be realized that the respondents in all the four communities namely Beposo, Atonsu, Kwamang and Nsuta agreed that in order for water supply to be sustainable, a number of factors must be put in place over time. For instance, the WATSAN committees need skills and abilities (sustainability factors under A in table 4.2) to be able to manage water in a sustainable manner. The community members also need to be aware of their civil responsibilities (sustainability factors under B in table 4.2) to ensure the sustainability of water facilities. More importantly, revenue flow to cover the recurrent cost of maintenance is a necessity (sustainability factors under C in table 4.2).

4.3 Institutional Data Analysis

Key officers of the following institutions in water governance at the local level (DA, Unit Committees, Traditional Leaders and WATSAN Committees) were interviewed to ascertain water governance issues in Sekyere Central District of Ghana.

4.3.1 Water and Sanitation Committees (WATSAN)

In an effort to strengthen the Community Based Management approach as part of the decentralization process in the water sector, it was noted that a number of village level institutions have been established to govern the water points.

The study shown that, about 88 percent of the respondents from the WATSAN Committees in the study communities (Beposo, Atonsu, Kwamang and Nsuta) confirmed that they are supposed to work closely with the District Assembly through the District Water and Sanitation Team (DWST) which assists in forming and training the committees to govern the water points and also ensure maintenance and management of water facilities in the communities but this is not happening as about 12 percent of the WATSAN committee

members in all the four communities under investigation could indicate that they have been receiving such training programmes. Hence majority (88%) of WATSAN Committee members in all the four study communities are not able to deliver as expected of them. In other words, they were not satisfied with their capacity to perform their functions.

About 12 percent of the WATSAN Committee members in all the four study communities affirmed that they perform a number of activities in order to ensure that the water sources and facilities were protected and to continue to provide water. These activities include cleaning and clearing surroundings, advising young ones on the usage of the rivers/ streams, boreholes, wells, dredging as well as constructing raised surfaces around the wells and boreholes.

In Atonsu community, World Vision drilled one borehole and three boreholes were drilled by the Ghana Water Company Ltd but only one was working at the time of interview.

The District Water and Sanitation Team had facilitated the establishment of two main systems of payment as means of raising money to meet the maintenance of water facilities as well as the provision of additional water points. These are routine payment where money is collected on daily basis (pay as you fetch) and special levies instituted occasionally as and when money is needed. Defaulters of payment of water levy are however sanctioned to ensure compliance and fairness.

The WATSAN Committee members in Beposo, Atonsu, Kwamang and Nsuta indicated that they had evolved their payment system through consultation and discussions over the years and stated that the levy systems were instituted through joint decisions between the WATSAN Committees and the entire community. Where payment systems were found to be discriminatory and least affordable, they were reviewed accordingly. In addition, all the

WATSAN Committees visited indicated that they had reviewed their levies within the past two years. The major reasons for the reviews were to procure additional water facilities and spare parts when there was a break down yet it was realized from all the four study communities that, the main problems affecting the WATSAN committees were; poor maintenance culture, frequent breakdown of boreholes and lack of capacity building for better governance of water services.

The research revealed that, all the key officers in the village level institutions in water governance believe that there is the need for training of the WATSAN Committees in order to strengthen the governance of water facilities. They further noted that the effective governance of the water resources and water facilities will depend on how well the village institutions such as WATSAN committees, and more importantly the caretakers have been empowered.

4.3.2 Traditional/Community Leaders

According to the traditional leaders in the various study communities, river/ streams is a deity and no single individual can claim ownership. In all the four communities (Beposo, Atonsu, Kwamang and Nsuta) visited, the study revealed that, previously it was possible for the chiefs and community leaders to set and enforce by-laws on the governance of the river banks and streams that prevented people from farming close to the rivers or streams or cut down trees along the riverbanks. However, the research shown that currently enforcement of these rules and regulations are difficult because of the many freedoms that the new political dispensation had brought. It was further revealed that because the rules and regulations were not written down, enforcement was dependent on the charisma and strength of the local leaders.

Most of these by-laws to govern the water points were linked to the care and maintenance of the water facilities as well as the hygienic conditions around the water.

Some of the notable by-laws for boreholes and wells included the following:

- No washing of plates or clothes or bathing at the water point.
- No animals are allowed to drink from the boreholes and wells.
- Children are not allowed to play at the borehole and well.
- Children below the age of 10 are not allowed to fetch water from the borehole/well.
- Sandals are to be removed when fetching water from the borehole/well

4.3.3 Community Water and Sanitation Agency

All (100%) of the interviewed officials of the community water and sanitation agency stated that the agency is mandated to facilitate the provision of safe drinking water and related sanitation services to rural communities and small towns in Ghana. They also indicated that the CWSA has since been facilitating the implementation of the National Community Water and Sanitation Programme (NCWSP) using the decentralized structures at the district and community levels. Again the study revealed that, the CWSA has links with organizations within the water sector such as; Water Resource Commission, Ghana Water Company Limited, the District Assemblies and the beneficiary communities in rural and small towns.

However, weak institutional linkages exist among these various governance structures.

4.3.4 Water Resources Commission

The study shown that, the Water Resources Commission has the mandate to regulate and manage Ghana's Water Resources and co-ordinate government policies in relation to them. The Commission also provides a forum for integration and collaboration of different interests and is composed of the major stakeholders involved in the water sector.

In addition, the research revealed that, even though the WRC acknowledges the role of the District Assembly in Water governance, about 98 percent of the District Assembly officials interviewed indicated that they are dissatisfied with the linkages between the WRC and the District Assembly. The weak linkage between these two institutions had contributed greatly to the lack of awareness of the communities on government laws (the WRC Act) governing the ownership and use of water resources, they further noted.

4.3.5 The District Assembly

The study revealed that, the District Assembly and the District Water and Sanitation Team are the local authority responsible for the implementation of water related programmes at the district level as well as providing sensitization programmes to WATSAN committee members and traditional leaders. However, it was realized that the District Assembly is not performing this all-important role and attributed this negligence of duty to weak institutional linkages that exist between the Assembly, Community Water and Sanitation Agency and the Water Resources Commission. This has also resulted in conflicts between the District Assembly and Traditional Authorities over Water Ownership.

4.3.6 Decentralization and Community Based Management of Water Facilities

All (100%) of the officials interviewed in the various institutions in water governance stated that the formation of WATSAN Committees as local level structures to facilitate and govern water facilities is a way of ensuring sustainability of the water supply systems. This is because with the Community Based Management approach, more emphasis is put on empowering these local level structures to function effectively.

4.3.7 Challenges of Water Governance

From a focus group discussion, it came to bear that due to the unequal access to sufficient and safe water, a significant number of the people got their water needs met from potentially contaminated sources. In fact, the poor were three times more likely to source water from wells, rivers and streams as compared to people with better living conditions. It was understood that the situation often led to high incidence of water diseases such as diarrhea, typhoid and cholera among the rural poor.

On the question of what the challenges of effective water governance are, the research revealed that the poor functionality of decentralization was the major challenge in ensuring effective water governance at the local levels. Even though responsibility had been decentralized away from central government with more responsibility to lower tiers of government, this decentralization had brought opportunities as well as threats. The opportunities were the larger possibility to manage water in an integrated way and the possibilities for practical participation of local communities and other local players. The threats are the lack of capacity at the local level and the risk that water issues could be buried under many other priorities.

Another challenge noted was capacity building for better water governance. The study revealed that water governance requires new skills and capabilities – in multi-functional water uses and also in the links with other disciplines, such as health and conflict resolution. It was seen that, capacity building was required to introduce new governance systems and familiarize decision-makers and implementers with different ways of managing water. It was further noted that groups that require special attention were the District Water and Sanitation Teams, the Unit and WATSAN Committees, traditional leaders and Caretakers and that

capacity building was more than just individual training, but should extend to creating new management systems within the local level institutions that were responsible for water resources management and the provision of water services which are lacking in the district. There are also limited human and financial resources among the governance structures.

The study also revealed that, by a stroke of the legislative pen and policy intervention (the enactment of the WRC Act) proprietary and managerial rights which had been held from time immemorial by stools and communities had been taken away from the people some of whom probably had no prior knowledge of the matter. This they said poses great challenge to effective water governance since the people no longer revere customs and traditions that govern the ownership and access to water.

4.4 Discussion of Findings

The discussion of the findings has been organized along the main issues emanating from the data analysis.

4.4.1 Ownership and management of water resources and water facilities

From the analysis, all the household respondents of the study communities recognized water as a God given resource and that every person has the right of access. According to the traditional leaders, the river or stream is a deity and no single individual can claim ownership. However with the advent of modern water facilities, the users of that facility are now being considered the rightful owners. The ownership becomes stronger if the people near the facility are the ones maintaining it.

Moreover, the research also revealed that there are various customs and beliefs that relate to access and control of water resources and water facilities at the community level but which

are not documented. All the traditional leaders interviewed mentioned that these traditions and customs are rarely practiced by the current generation who considers them as primitive. This finding confirms the observations made by Agyemang (2005) that as a result of colonization and the advent of modern state, the potency of customary norms as tools for the enforcement of norms on water usage has significantly diminished. Nevertheless, there is a growing body of evidence to suggest that some traditional practices are good for the access and control of water resources and water facilities (Mostert, 2003)

4.4.2 Weak Policy Framework

The result from the field revealed that there is weak policy framework. This is because, the result of the analysis has shown that about 74 percent of community members do not consider themselves and the government as partners committed to a shared vision of better service provision and delivery. It was found out that a number of government service providers (particularly the District Assembly) blame community members for not understanding the government policy on decentralized water service provision. They gave the following examples to illustrate their point: Some community members question the rationale behind paying water user fees; some WATSAN Committee members resign because their request to be paid is turned down. From a critical perspective, the community members' cynicism about the government's decentralization policy appears attributable to the failure of government representatives (the District Assembly and Unit Committee) to undertake adequate education on government policies. As a result, misinformation and misinterpretation have distorted the communities understanding and perception of the concept. Many community members still believe that the real intention of the government is to shirk its responsibility to deliver water services to the community. The community reactions clearly indicate that government could have saved them much frustration had it taken the time to explain its policies better.

4.4.3 Conflicts between the District Assembly and Traditional Authorities over Water Ownership

Friction between traditional leaders and the District Assembly over water ownership was also observed from the analysis. There is conflict over the change in ownership of water resources and water facilities from traditional authorities to the Government which is represented by the District Assembly at the local level. Whilst the District Assembly on behalf of Government claims ownership over water resources, the traditional leaders also claim that they are the rightful owners of water. From a critical perspective, this conflict between the District Assembly and the traditional authority could have been avoided had traditional leaders been consulted during the process of change in policy.

4.4.4 Limited human and financial resources among the governance structures

The research revealed that the governance structures (the District Assembly, Unit and WATSAN Committees) do not have adequate human and financial resources to be able to provide the technical and supervisory support needed to ensure delivery of water services. From a critical viewpoint providing more funds to local level institutions is a priority action to achieving effective water governance. That is, the decentralized structures (the District Assembly, Unit and WATSAN committees) should be well resourced financially to enable them carry out their functions successfully.

4.4.5 Awareness of Water related laws

The result of the analysis has shown that about 71 percent of the household respondents were not aware of water related laws in the country. This is happening because the implementation process of the decentralization policy as it relates to water development has not been quite

successful at community levels. This could be attributed to the weak institutional linkages that exist among the various governance structures (the WRC, DA, Unit and Watsan Committees). The sustainability of water and water facilities cannot be secured in the near future if beneficiary communities have little knowledge of water related laws and issues.

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CHAPTER FIVE

RECOMMENDATIONS AND CONCLUSION

This chapter makes recommendations and conclusion based on the discussion of findings

5.1 Recommendations

These recommendations are being made to ensure effective water governance at the local levels. They are based on the findings of the research.

There is the need to intensify awareness campaigns on the policy changes and the legal framework governing access to and control of water resources and water facilities. The research has revealed that communities have their own traditional practices and beliefs regarding ownership and access to water resources and water facilities. However, the practices, customs, beliefs as well as the traditional rules and regulations are not documented. There is the need to evaluate, document and promote the good traditional practices that relate to the access and ownership of water resources/facilities. If possible, some of the useful traditions or customs could be modified to suit the current Community Based Management approach in rural water supply.

The recognition that the users are the best managers of the water facilities has strengthened the sense of ownership of the water facilities by the rural people. However, there are still people in the villages who have not fully understood the Community Based Management of water resources/facilities. Intensifying awareness campaigns on the new approach would help raise the level of understanding of the approach and strengthen the chances of sustainability of water projects at community levels. This should be the responsibility of the District Assembly with assistance from the Unit and WATSAN Committees.

Rural communities must be encouraged to form water user associations aside the WATSAN Committees to help in addressing their water needs. Such associations will often be more able to mobilize labour and other resources needed to improve water management through establishing and enforcing rules of access and duties of the users. They must be born partly out of the need to complement government efforts in water supply, increase user's participation in water management and to establish dialogue between water users due to increasing scarcity. Their involvement in water management will be expected to improve access and fair distribution of water among the different users and help in the conservation of catchment areas. This approach is considered useful alternatives to the poorly functioning centralized approach to water management that has contributed to undermining sustainable community practices and traditional knowledge on water management.

The research showed that the decentralization process had placed a lot of demands on the available limited human and financial resources at the local level. The government offices at the local government level lack financial resources and have very limited qualified human resources. The government, donors and the NGO's need to deliberately focus on strengthening the capacity of the governance structures in order to facilitate the Community Based Management of water services.

Governance of the water schemes would improve if the long-term direction of the WATSAN Committees were clearly defined. To operate as a legal entity, the WATSAN Committees need to be assisted to develop their own policies, systems and procedures as well as rules and regulations. The Committees need to be taken through an organizational development process.

The rural population is not fully aware of the various policies and laws governing access to and management of water services. There is therefore the need to intensify awareness campaigns on the policy changes and the legal framework governing access to and control of water resources/ facilities at the local level.

In the light of the National Decentralization Policy adopted by the Government in 1988, there is the need to revisit the mandate of the Water Resources Commission with a view to synchronizing such mandate with the role of local government authorities in the administration and management of water resources/facilities.

5.2 Conclusion

Water has an economic value in all its competing uses and should be recognized as an economic good. Water development and management should be based on a participatory approach, involving users, planners and policy makers at all levels. Women play a central part in the provision, management and safeguarding of water

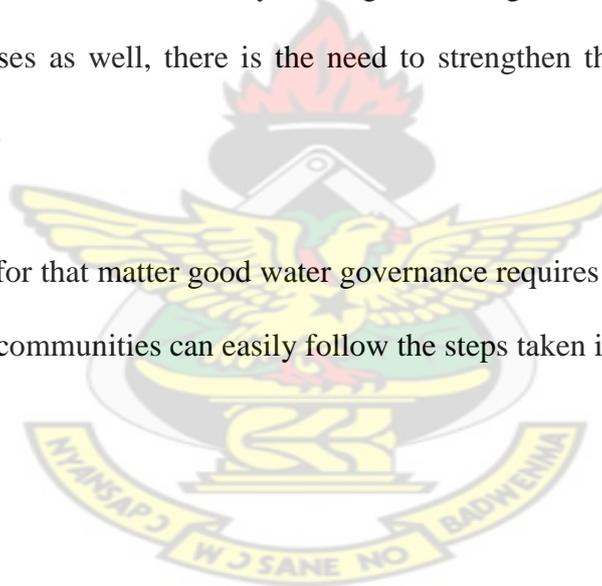
The research has revealed that there exist a number of traditional practices and beliefs regarding ownership and access to water resources and water facilities at the local level. These traditional practices and beliefs in the past helped to protect water resources/facilities. However, with the introduction of the Water Resources Commission Act which vests water ownership and access in the President, people no longer obey these all-important traditional practices and beliefs which have in the past protected water bodies in the communities.

The research again revealed that the demand responsive approach to rural water supply will strengthen ownership and sustainability of the water facilities in the rural communities.

Community ownership of the water schemes and points will definitely reduce the heavy load on the government since the repair and maintenance responsibilities of the water schemes will rest in the hands of the community members. The demand responsive policy framework is conducive to the Community Based Management of water services but the rural communities are not fully aware of the framework.

The decentralization process has not had enough impact on water governance at the local level. This is due to poor institutional linkages among the various key players namely the Water Resources Commission, the District Assembly, the WATSAN Committee, the Traditional Authority and the community at large. Since governance is not only about institutions but processes as well, there is the need to strengthen the level of coordination among the key players.

Good governance and for that matter good water governance requires that all policy decisions are transparent so that communities can easily follow the steps taken in policy formulation.



REFERENCES

Adger, W., K. Brown., J. Fairbrass., A. Jordan., J. Paavola., S. Rosendo., (2003).
Governance for sustainability: towards a 'thick' analysis of environmental decision
making. *Environment and Planning A*, 35, 1095-1110.

Appleton, B and P. Evans (1993). Community Management Today: The Role of
Communities in the Management of Improved Water Supply Systems. The Hague,
The Netherlands, IRC International Water and Sanitation Centre.

Bailey, K. (1982). Methods of Social Research, New York, The Free Press.

Bakker, K. (Ed.). (2007). Eau Canada: The Future of Canada's Water. Vancouver:
UBC Press

Bakker, K., (2003). Good Governance in Restructuring Water Supply: A Handbook,
Federation of Canadian Municipalities, Ottawa.

Bjornlund, H. (2005). Making economics and environment meet for sustainable water
management. Paper presented at the 58th Canadian Water Resources Association
Annual Conference, Banff, Alberta.

Bjornlund, H. (2000). To regulate or to market - striking the balance for sustainable
water use. Paper presented at the Water and the Law Conference, Adelaide, Australia.

Boateng, O.J, (1997). Environmental Law: Ghana Water Laws, Review of Ghana Law, Accra. UP Legon.

Booher, D. E. and Innes, J. E. (2010). Governance for Resilience: CALFED as a Complex Adaptive Network for Resource Management. *Ecology and Society*, 15(3), 25-31.

Burns, N. and Grove, S.K. (2005) *Contemporary Social Research Methods: conduct, critique, & utilization*. 5th ed. St. Louis, Missouri: Elsevier Saunders

Capistrano, D., Samper, C., Lee, M. J. and Raudsepp-Hearne, C. (Eds.). (2005). *Ecosystems and Human Well-being: Multiscale Assessments (Vol. Volume 4)*. Washington: Island Press.

Cleaver, F. (2000). Moral ecological rationality, institutions and the management of common property resources. *Development and Change*, 31, 361–383

Cleaver, F. (2007). *Water governance and poverty: a framework for analysis*. (In Press).

Cleaver, F., Franks, T., Boesten, J. and Kiire, A. (2006). *Water governance and poverty: What works for the poor*. DFID Research Report, University of Bradford

Cohen, A. and Davidson, S. (2011). The Watershed Approach: Challenges, Antecedents, and the Transition from Technical Tool to Governance Unit. *Water Alternatives*, 4(1), 521 - 534.

Commission on Global Governance (1995). *Our Global Neighborhood*. Oxford University Press, Oxford.

Community Water and Sanitation Programme (1996). *Implementation Manual*, Ministry of Works and Housing, Government of Ghana.

Community Water and Sanitation Agency (2004). "Strategic Investment Plan 2005 - 2015" (PDF). [internet] Available at < http://www.cwsagh.org/documents/SIP_2005-2015.pdf> [Accessed on 24/02/2012]

Cortner, H. J. and Moote, M. A. (1999). *The Politics of Ecosystem Management*. Washington, DC: Island Press.

Costanza, R. (1998). Principles for sustainable governance of the oceans. *Science*, 271(5374), 198-199.

Crona, B. and Hubacek, K. (2010). The Right Connections: How do Social Networks Lubricate the Machinery of Natural Resource Governance? *Ecology and Society*, 15(4), 18-23.

Dale, A. (2001). *At the Edge: Sustainable Development in the 21st Century*.
Vancouver: UBC Press.

De Loë, R. and Kreutzwiser, R. (2007). *Challenging the Status Quo: The Evolution of Water Governance in Canada*. In K. Bakker (Ed.), *Eau Canada: The Future of Canada's Water* (pp. 85 -103). Vancouver: UBC Press.

De Loë, R. and Bjornlund, H. (2010). *Governance and the Challenges of Water and Food Security*. In H. Bjornlund (Ed.), *Incentives and Instruments for Sustainable Irrigation* (pp. 41 - 57). Southampton: Wessex Institute of Technology Press.

De Loë, R. (2005). *Water governance in Canada: Trends and implications*. Paper presented at the 58th Canadian Water Resources Association Annual Conference, Banff, Alberta on 10th June 2005.

Dryzek, J. S. (1987). *Rational Ecology: Environment and Political Economy*. New York: Basil Blackwell.

Eugene, O.S. (2010). *Assessment of Water Governance in Ghana*.

[internet] Available at <http://www.gwpao.org/GHANA_Governance.pdf>

[Accessed on 11/01/12]

Gabriel, A. and Kreutzwiser, R. (1993). *The Ontario drought hazard: A review of impacts, 1960-1989, and management implications*. *Canadian Water Resources Journal*, 18, 117-132.

Ghana Government (1996). Water Resources Commission Act. The Act 522 of Parliament of Ghana.

Gibson, R. B., Hassan, S., Holtz, S., Tansey, J. and Whitelaw, G. (2005). Sustainability Assessment: Criteria, Processes and Applications. London: Earthscan.

Gleick, P. H. (2000). Global freshwater resources: Soft-path solutions for the 21st century. *Science*, 302, 1524-1528.

Global Water Partnership, (2002). Introducing Effective Water Governance. TEC Background Paper 7.

Green, C. (2007). Mapping the field: The landscapes of Governance. EU-funded SWITCH Project.

Gumisai, M. (2004). Rough Road to Sustainable Development. *Africa Renewal*, Vol.18, pp. 2-3.

Halcrow Consultancy Report (2000). Consultancy services for the Restructuring of the Water Sector, Final Report by Halcrow and Partners for Republic of Ghana, Ministry of Works and Housing.

Hall Peter, (2003). The Challenge in Effective Water Governance, Sage Publications *International Journal of water resources Development: Water Management for Large Cities*. Volume 22 No. 2 June 2006. pp185.

Healey, P. (1992). Planning through debate. *Town Planning Review*, 63(1), 143-162.

Hill, C., Furlong, K., Bakker, K. and Cohen, A. (2008). Harmonization Versus Subsidiarity in Water Governance: A Review of Water Governance and Legislation in Canadian Provinces and Territories. *Canadian Water Resources Journal*, 33(4), 315 - 332.

Huitema, D., Mostert, E., Egas, W., Moellencamp, S., Pahl-Wostl, C. and Yalcin, R. (2009). Adaptive Water Governance: Assessing the Institutional Prescriptions of Adaptive (Co- Management from a Governance Perspective and Defining a Research Agenda. *Ecology and Society*, 14(1), 26-45.

Innes, J. E. and Booher, D. E. (2000). Collaborative Dialogue as a Policy Making Strategy. [internet] Available at < <http://www.iurd.ced.berkeley.edu/pub/WP-2000-05.pdf>> [Accessed on 12/03/2012]

Jacomina, P. (2005). Water in Rural Communities. Johannesburg, South Africa.

Kaufmann, D. and Kraay, A. (2008). Governance indicators: where are we, where should we be going? Oxford, U.K.: Oxford University Press on behalf of the World Bank.

Kaufman, D., Kray, A., & Lobaton, P. L. (1999). 'Governance matters and aggregating governance indicators', World Bank Research Working Conference Paper Series, No. 2195.

Kemp, R., Parto, S., and Gibson, R. B. (2005). Governance for sustainable development: moving from theory to practice. *International Journal of Sustainable Development*, 8(1/2), 12-30.

Kendie, B.S and Abane, A.M. (2001). "User Communities and Sustainable Development of Drinking Water Services in Rural Ghana". In Saaka Yakubu (ed.) *Regionalism and Public Policy in Northern Ghana*. Peter Lang Publication, Inc., New York.

Keohane, R. and Ostrom, E. (1995). Local Commons and Global Interdependence: Heterogeneity and Co-operation in Two Domains, London, Sage Press.

Kooiman, J. (2003). *Governing as Governance*. London, California and New Delhi: Sage Publications.

Kooiman, J. (1993). Modern Governance: New Government-Society Interactions, London, Sage Publications.

Kreutzwiser, R. D., de Loë, R., Durley, J. and Priddle, C. (2004). Water allocation and the permit to take water program in Ontario: Challenges and opportunities. *Canadian Water Resources Journal*, 29(2), 135-146.

Kreutzwiser, R. D. and De Loë, R. (2004). Water Security: From Exports to Contamination of Local Water Supplies. In B. Mitchell (Ed.), Resource and Environmental Management in Canada: Addressing Conflict and Uncertainty (Third ed., pp. 166-194). Don Mills: Oxford University Press.

Kumekpor, T.K.B., (2002); Research Methods and Techniques of Social Research, Accra, SunLife Publications.

Lebel, L., Anderies, J. M., Campbell, B., Folke, C., Hatfield-Dodds, S., and Hughes, T. P. (2006). Governance and the Capacity to Manage Resilience in Regional Social-Ecological Systems. *Ecology and Society*, 11(1), Article 19. [internet] Available at <<http://www.ecologyandsociety.org/vol11/iss11/art19>> [Accessed on 27/01/12]

Lee, M. (2003). Conceptualizing the new governance: a new institution of social coordination. Paper presented at the Institutional Analysis and Development, Mini-Conference, 3–5 May, Workshop in Political Theory and Policy Analysis, Indiana University, Bloomington, IN

Legaspi, P. (2006). 'Reforms and practices in local regulatory governance: the case of Philippines, Minogue and Cariño (eds) *Regulatory Governance in Developing Countries*, Cheltenham: Edward Elgar Publishing

Ljungman, C.M., (2004). "Applying a rights-based approach to development: concepts and principles". Paper presented at conference on 'The Winners and Losers from Rights-Based Approaches to Development, University of Manchester, 21-22 February 2005.

Lundqvist, L. J. (2004). Integrating Swedish water resource management: a multi-level governance trilemma. *Local Environment*, 9(5), 413–424.

Majone, G. (1997). 'From the positive to the regulatory state: Causes and consequences of the changes in modes of governance, *Journal of Public Policy* 17:2:139-167.

McGranaham, G. and Satterthwaite, D. (2004). Pro-Poor Urban Water and Sanitation Governance. Loughborough University, Loughborough.

McCarthy, D. (2003). Post-normal governance: An emerging counter proposal. *Environments*, 31(1), 79-92.

McCarthy, D. (2006). A Critical Systems Approach to Socio-Ecological Systems: Implications for social learning and governance. Unpublished PhD, University of Waterloo, Waterloo.

McGinnis, M. D. E. (2000). *Polycentric Games and Institutions*. Ann Arbor, MI: University of Michigan Press.

Mensah, K.B. (2009). Restructuring the Delivery of Clean Water to Rural Communities in Ghana: The Institutional and Regulatory Issues' to be published in Water Policy.

Merriam-Webster. (2008). Merriam-Webster online dictionary and thesaurus. [internet] Available at <<http://www.merriam-webster.com>> [Accessed on 21/03/12]

Minogue, M. and Cariño, L. (2006). Regulatory Governance in Developing Countries. Edward Elgar.

Minogue, M. (2004). 'Regulatory reform in developing countries: is 'best practice transferable?' in, Vass, P. (ed.) Regulatory Review 2004-2005. Bath: University of Bath.

Mitchell, B. (2004). Email to Patricia Fitzpatrick. Waterloo.

Mtisi, S. and Nicol, A. (2003). Water Points and Water Policies: Decentralisation and Community Management of Sangwe Communal Area, Zimbabwe. Sustainable Livelihoods in Southern Africa Research Paper Series. No. 15

Newman, J. (2001). Modernising Governance: New Labour, Policy and Society. Sage, London.

Nowlan, L. and Bakker, K. (2008). Delegating Water Governance: Issues and Challenges in the BC Context. Vancouver, BC: UBC Programme on Water Governance.

Nowlan, L. and Bakker, K. (2010). Practising Shared Water Governance in Canada: A Primer. Vancouver: UBC Program on Water Governance. Office of Research Ethics University of Waterloo. Ethics Review Process. [internet] Available at <<http://www.research.uwaterloo.ca/ethics/human/ethicsReview/reviewProcess.htm>> [Accessed on 17/02/12]

North, D.C. (1993). 'Economics performance through time'. Les Prix Nobel. The noble prices 1993. Stockholm: the noble foundation and the Royal Swedish Academy of Science.

North, D. C. (1990). Institutions, institutional change and economic performance. Cambridge, UK: Cambridge University Press

Organisation for Economic Co-operation and Development (1995) Governance in transition. Public management reforms in OECD countries. Paris: OECD.

Ogus, A. (2001). Regulatory Institutions and Structures, Manchester: CRC, University of Manchester.

Ostrom, E. (2001). Vulnerability and polycentric governance systems. [internet] Available at <<http://www.ihdp.uni>> [Accessed on 11/02/12]

Pahl-Wostl, C., Craps, M., Dewulf, A., Mostert, E., Tabara, D. and Taillieu, T. (2007). Social Learning and Water Resources Management. Ecology and Society, 12(2), Article 5.

Plummer, R., Spiers, A., FitzGibbon, J. and Imhof, J. (2005). The expanding institutional context for water resources management: The case of the Grand River watershed. *Canadian Water Resources Journal*, 30(3), 227-244.

Rhodes, R. A. W. (2000) Conclusion: Transforming British government. In, *British Government*, vol1: Changing institutions:254-66. Basingstoke: Macmillan.

Rhodes, R. A. W. (1997) *Understanding Governance: Policy Networks, Governance, Reflexivity and Accountability*. Berkshire: Open University Press.

Rogers, P. and Hall, A.W. (2003). *Effective Water Governance*. Global Water Partnership. Elanders Novum, Sweden.

Ross, K. C. (1996). *Air University Sampling and Surveying Handbook: Guidelines for planning, conducting, and organizing surveys*. [internet] Available at <http://www.au.af.mil/au/awc/awcgate/edref/smpl-srv.pdf> [Accessed on 14/02/12]

Saleth, R.M. and Dinar, A. (2005). 'Water institutional reforms: theory and practice', *Water Policy* 2005, 7: 1- 19

Sampford, C. (2002). *Environmental Governance for Biodiversity*. *Environmental Science and Policy*, 5(1), 79-90.

Schacter, M. (2000). 'When Accountability Fails: A Framework for Diagnosis and Action'. Policy Brief Number 9. Ottawa: Institute of Governance.

Schneider, H. (1999). Participatory Governance: The Missing Link for Poverty Reduction. Paris: OECD Development Centre Policy Brief 17.

Schofield, N. and Burt, A. (2003). Issues in environmental water allocation – an Australian perspective. *Water Science and Technology*, 48(7), 83-88.

Schofield, N., Burt, A. and Connell, D. (2003). *Environmental Water Allocation: Principles, Policies and Practices*. Canberra: Land & Water Australia.

Shah, T. and van Koppen, B. (2009). Governance of informal water economies: a preliminary framework. IWMI: Colombo.

Steins, N, A. and Edwards, V.M. (1998). Platforms for Collective Action in Multiple-Use CPRs. Paper Presented at "Crossing Boundaries", the seventh annual conference of the International Association for the Study of Common Property, Vancouver, British Columbia, Canada

Syme, G. J., Nancarrow, B. E. and McCreddin, J. A. (1999). Defining the components of fairness in the allocation of water to environmental and human uses. *Journal of Environmental Management*, 57(1), 51-70.

Tate, D. (1990). *Water Demand Management in Canada: A State of the Art Review*.
Ottawa: Environment Canada, Inland Waters Directorate.

Tendler, J. (1997). *Good Government in the Tropic*, Maryland, Johns Hopkins Press.

Tropp, H. (2007). 'Water Governance: trends and needs for new capacity
development', *Water Policy* 9: Supplement 2: 19-30.

United Nations Development Programme (2003). "Clean Water and Sanitation for the
Poor" [internet] Available at <<http://www.undp.org>> [Accessed on 20/01/12]

United Nations Development Programme (2004). *Decentralised Governance for
Development: A Combined Practice*

United Nations Development Programme (2007). *Effective Water Governance*.
[internet] Available at <http://www.undp.org/water/about_us.html> [Accessed on
29/02/12]

United Nations World Water Assessment Programme (2010) *Managing Water under
Uncertainty and Risk: United Nations World Development Report*, New York,
UNWWAP

United Nations Educational, Scientific and Cultural Organisation (2006). *Water: A
shared responsibility - The United Nations World Water Development Report 2*. New
York: Berghahn Books and UNESCO Publishing.

Von Korff, Y., d'Aquino, P., Daniell, K. A. and Bijlsma, R. (2010). Designing Participation Processes for Water Management and Beyond. *Ecology and Society*, 15(3).

Warner, J. (2005). Multi-stakeholder platforms: integrating society in water resource management? *Ambient. soc.*, July./Dec. 2005, vol.8, no.2, p.4-28. ISSN 1414-753X.

Wegerich, K. (2001). Institutional change: A theoretical approach. Occasional Paper 30. Water Issues Study Group. School of Oriental and African Studies (SOAS): University of London

Wester, P., Merrey, D.J. and De Lange, M. (2003). Boundaries of consent: Stakeholder representation. *World Development* Vol. 31, No. 5, pp. 797–812

World Meteorological Organization (2009). Chapter 3: Integrated Water Resources Management. In World Meteorological Organization (Ed.), *Guide to Hydrological Practices: Management of Water Resources and Application of Hydrological Practices* (6th ed., Vol. 2, pp. II.3-1 to II.3.15). Geneva: World Meteorological Organization

Young, O. R. (2002). *Institutional Dimensions of Environmental Change: Fit, Scale and Interplay*. Cambridge, Mass: MIT Press.

Young, O. R. (2005). Science Plan - Institutional Dimensions of Global Environmental Change (IHDP Report No. 16). Bonn, Germany: International Human Dimensions Programme on Global Environmental Change.

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APPENDIX A

DEPARTMENT OF PLANNING

COLLEGE OF ARCHITECTURE AND PLANNING

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

SPECIAL STUDY:

WATER GOVERNANCE IN SEKYERE CENTRAL DISTRICT OF GHANA

The following questionnaire is part of a survey that is designed to ascertain water governance issues in Sekyere Central District of Ghana. The results of the survey will be analyzed as part of my Degree research work. Therefore, I assure you that any information that will be gathered from you will be kept confidential. Thank you.

QUESTIONNAIRES FOR HOUSEHOLD HEAD

Community/ Town.....

Household number

1) Gender Male Female

2) Educational Background (Highest level attained)

a) Basic (i.e. Primary, Middle, JHS)

b) Secondary (SSS/SHS)

c) Tertiary

d) Others, Please specify.....

3) How many households are in this house? 1-3 4-6 7+

4) Which of the following do you have in the community as a source of water?

Borehole

Well

Pipe borne water

River

Others, please specify

5) Do you have water in your home? Yes No

6) Are you satisfied with the water supply to your home/ community? Yes No

If no, why?.....

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7) Who owns the water (e.g. boreholes, wells etc)?

Individuals [1] NGO [2] Community [3] others (specify) [4].....

8) How much do you spend on water services per month?

.....
.....

9) Who fixes the price of the water?

Community leaders [1] WATSAN [2] NGO [3]

DWST [4] Others (specify) [5]

10) What are the proceeds from the sale of water used for?

Maintenance [1] Provision of additional water points [2]

Others (specify) [3]

11) Who manages the water resources and water facilities (e.g. boreholes, wells etc)?

.....

12) In your own opinion, which of the following explains the water you use in your community

[1] Safe to drink

[2] Clear

[3] Odourless

[4] Others (please specify).....

13) What kinds of problems do you encounter in water delivery to your home?

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

14) Are you satisfied with water service provision to your community? Yes No

If No, why?

15) What are the health problems/ diseases associated with inadequate water supply to your community?

.....
.....

16) Can you suggest how water supply to your homes/ community can be improved?

.....
.....

17) Do you think our water resources receive adequate emphasis-priority from the individuals and government officials? Yes No

18) Is there any political attachment to the provision of potable water in your community?

Yes No

If yes, what evidence can you give to support your answer?

.....

19) What is the role of the community members in water services provision?

.....

20) Are there any traditions or customs that govern access to and control of water in your community?

Yes [1] No [2]

21) If yes, please list them.

a)

c)

d)

e)

22) Are there any by-laws governing access to and control of water facilities (wells, boreholes, and piped water)?

a) Yes [1] b) No [2]

23) If yes, please list them.

a)

b)

c)

24) What form do they take?

Written [1] Verbal [2]

25) Who sets the by laws?.....

26) Who enforces the by-laws?

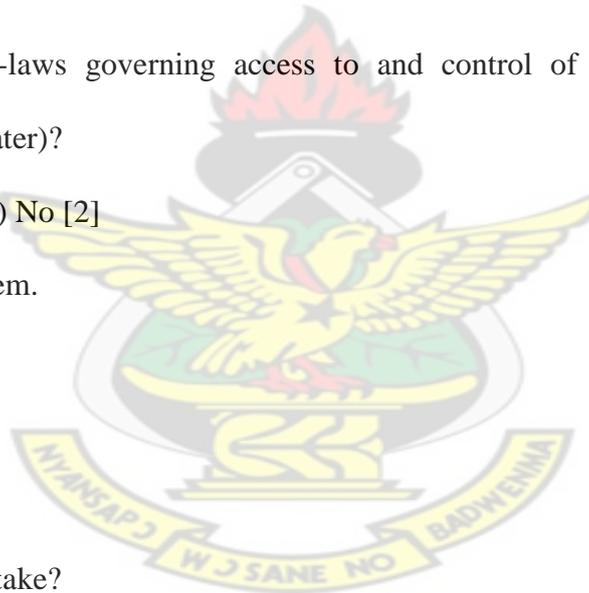
Villagers staying near the water point [1] Chief and community leaders [2]

Water boards [3] others (specify)

27) Are the by-laws often revised?

Yes [1] No [2]

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28) Do people in the community comply with the by-laws?

Yes [1] No [2]

29) If no, what charges are levelled against them?

30) Do you have any idea of government laws governing the ownership and use of water resources/facilities?

Yes [1] No [2]

31) If no, why?

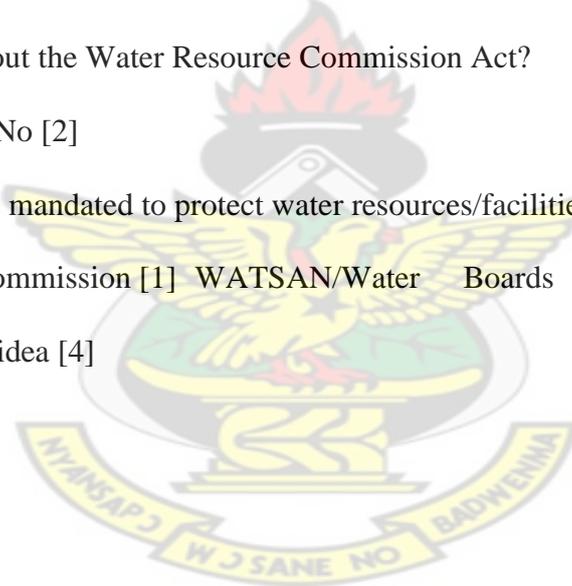
.....
.....

32) Have you heard about the Water Resource Commission Act?

Yes [1] No [2]

33) Which institution is mandated to protect water resources/facilities?

The Water Resource Commission [1] WATSAN/Water Boards [2] The chieftancy institutions [3] No idea [4]



34) The following are factors, which ensure the sustainability of water facilities. Please tick (✓) the response that best reflects your level of agreement or disagreement.

No	SUSTAINABILITY FACTORS	RESPONSE			
		Strongly Agree [1]	Agree [2]	Disagree [3]	Strongly Disagree [4]
A	SKILLS AND ABILITIES				
1	Technical skills are needed to maintain water facilities				
2	Administrative skills are required to collect revenue, maintain bank accounts, keep books and make payment for services				
3	The ability to build consensus and resolve conflicts within the community and between leaders is required				
B	PUBLIC AWARENESS				
4	There is the need for public awareness to ensure the full benefit of the service through activities like hygiene and health education				
5	There is the need for awareness of civil responsibility				
C	ECONOMIC FACTORS				
6	Revenue flow to cover the recurring cost of maintenance is a necessity				

APPENDIX B

SPECIAL STUDY:

WATER GOVERNANCE IN SEKYERE CENTRAL DISTRICT OF GHANA

The following questionnaire is part of a survey that is designed to ascertain water governance issues in Sekyere Central District of Ghana. The results of the survey will be analyzed as part of my Degree research work. Therefore, I assure you that any information that will be gathered from you will be kept confidential. Thank you.

**INTERVIEW GUIDE FOR THE DISTRICT WATER AND SANITATION TEAM
AND THE DISTRICT PLANNING OFFICER**

- 1) Position in institution.....
- 2) In your opinion who owns the streams and rivers?
God given [1] Community [2] Government [3] Others (specify) [4].....
- 3) Why do you think that way? (Briefly explain your answer to question 2)
.....
.....
- 4) Have you heard about the Water Resource Commission Act?
Yes [1] No [2]
- 5) If no, why?
.....
.....
- 6) Which institution is mandated to protect water resources?

The Water Resource Commission [1] WATSAN [2] Water Boards [3] The
chieftaincy institution [4] No idea [5]

7) What are the roles of the District Assembly in the provision of water services?

- a)
- b)
- c)

8) Do you involve the community in the provision of water services?

Yes [1] No [2]

9) If yes, how are they involved?

- a)
- b)
- c)
- d)

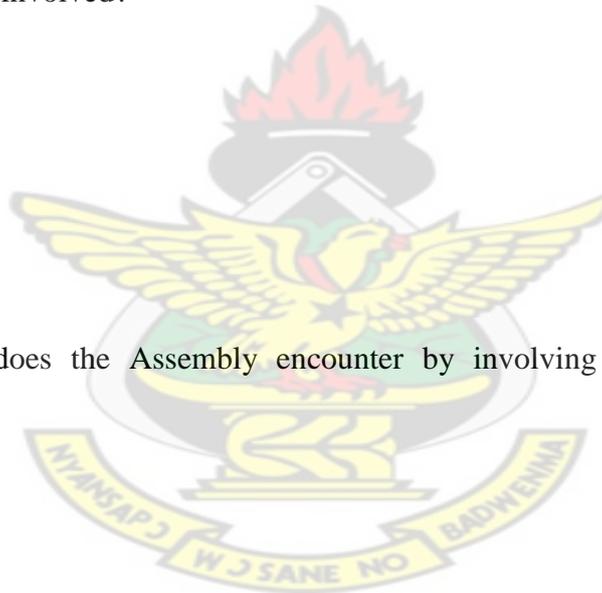
10) What problems does the Assembly encounter by involving the community in its activities?

- a)
- b)

11) What measures are currently in place to ensure effective water governance in the communities?

- a)
- b)
- c)
- d)

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12) What measures do you propose to be in place to ensure effective water governance in the communities?

- a)
- b)
- c)
- d)

13) What challenges do you encounter in governing water in the communities?

- a)
- b)
- c)
- d)

14) How can the above challenges be overcome?

- a)
- b)



15) The following are factors, which ensure the sustainability of water facilities and make water governance effective in practice. Please tick (√) the response that best reflects your level of agreement or disagreement. (see the table below)

NO	SUSTAINABILITY FACTORS	RESPONSE			
		Strongly Agree [1]	Agree [2]	Disagree [3]	Strongly Disagree [4]
A	SKILLS AND ABILITIES				
1	Technical skills are needed to maintain water and sanitation facilities				
2	Administrative skills are required to collect revenue, maintain bank accounts, keep books and make payment for services				
3	The ability to build consensus and resolve conflicts within the community and between leaders is required				
B	PUBLIC AWARENESS				
4	There is the need for public awareness to ensure the full benefit of the service through activities like hygiene and health education				
5	There should be awareness of civil responsibility				
C	ECONOMIC FACTORS				
6	Revenue flow to cover the recurring cost of maintenance is a necessity				

APPENDIX C

SPECIAL STUDY:

WATER GOVERNANCE IN SEKYERE CENTRAL DISTRICT OF GHANA

The following questionnaire is part of a survey that is designed to ascertain water governance issues in Sekyere District of Ghana. The results of the survey will be analyzed as part of my Degree research work. Therefore, I assure you that any information that will be gathered from you will be kept confidential. Thank you.

INTERVIEW GUIDE FOR WATSAN COMMITTEE/ WATER BOARD

- 1) Name of community.....
- 2) Position held in the Watsan Committee
- 3) In your opinion who owns the streams and rivers?
God given [1] b) community [2] Government [3] Others (specify)
- 4) Why do you think that way? (Briefly explain your answer to question 4)
.....
- 5) Are there any by-laws governing access to and control of water resources (rivers and streams) and/ or water facilities (wells, boreholes or piped water)?
Yes [1] No [2]
- 6) If yes, please list them.
 - a)
 - b)
 - c)
 - d)

7) What form do they take?

Written [1] Verbal [2]

8) Who sets the by-laws?.....

9) Who enforces the by-laws?

Villagers staying near the water point [1] Chief and community leaders [2] WATSAN/
Water boards [3] Others (specify).....

10) Are the by-laws often revised?

Yes [1] No [2]

11) Do people in the community comply with the by-laws?

Yes [1] No [2]

12) If no what charges are levelled against them?

- a)
- b)
- c)
- d)

13) Have you heard about the Water Resources Commission Act?

Yes [1] No [2] (If yes, answer questions 16 to 20)

14) If no, why?

.....
.....

15) Which institution is mandated to protect water resources or water facility?

The Water Resource Commission [1] WATSAN/Water Boards [2] The chieftaincy
institution [3] No idea [4]

16) How do government laws governing water provision and use affect community management of water?

.....
.....

17) What are the roles of Watsan Committee/Water Board in water governance?

a)

b)

18) Do you involve the community in water services provision?

Yes [1] No [2]

19) Are people willing to participate in your activities?

Yes [1] No [2]

20). If yes, to what extent are they involved?

a)

b)

c)

21) How do people access water in this community?

Buy [1] Beg from community leaders [2] Free [3] Others (specify).....

If they buy, answer questions 22 to 36

22) What payment system is in place for community members?

Routine payment system [1]

Special levies instituted occasionally as and when money is needed [2]

Free access to water [3] pay as you fetch [4]

23) If routine, how often is the payment made?

Daily [1] Weekly [2] Monthly [3] Yearly [4] Others (specify)

24) What arrangement underlies the routine payment system?

[1] Equal amount paid by men and women

[2] Different amount by men and women

[3] Household heads pay equal amounts

[4] Only women pay equal amount

[5] Others (specify).....

25) Do the payment systems go with exemptions?

Yes [1] No [2]

26) If yes, who is/are exempted?

The aged [1] School children [2] Others (specify)

27) What sanctions are levelled against defaulters?

Persuasion [1] Apprehension [2] Ban from fetching water [3] Others (specify).....

28) How is the payment system instituted?

[1] Watsan/Water Board's decision

[2] Joint decisions between the Watsan Committee and the community

[3] Community leaders' decision

[4] Others (specify).....

29) Do you review the payment systems?

Yes [1] No [2]

30) If yes, why are they reviewed?

[1] To make payments affordable

[2] To procure an additional facility

[3] To contain the effects of inflation [4] Others (specify)

31) How much is obtained from the payment system per year?

32) What is the amount obtained used for?

Maintenance [1] Provision of additional water points [2]

Others (specify) [3].....

33) Do you save part of the money obtained?

Yes [1] No [2]

34) If yes, where do you save?

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Bank [1] Susu group [2] With the Watsan treasure [3]

Others (specify).....

35) How frequent do you maintain water facilities?

Weekly [1] Bi-weekly [2] Monthly [3] Others (specify)

36) What goes into the maintenance of water resources or water facility?

.....

37) List 3 major challenges that you encounter in ensuring effective water governance in your community?

a)

b)

c)

38) How can these challenges be overcome?

a)

b)

c)

39) The following are factors, which ensure the sustainability of water facilities and make water governance effective in practice. Please tick (✓) the response that best reflects your level of agreement or disagreement. (see the table below)

No	SUSTAINABILITY FACTORS	RESPONSE			
		Strongly Agree [1]	Agree [2]	Disagree [3]	Strongly Disagree [4]
A	SKILLS AND ABILITIES				
1	Technical skills are needed to maintain water and sanitation facilities				
2	Administrative skills are required to collect revenue, maintain bank accounts, keep books and make payment for services				
3	The ability to build consensus and resolve conflicts within the community and between leaders is required				
B	PUBLIC AWARENESS				
4	There is the need for public awareness to ensure the full benefit of the service through activities like hygiene and health education				
5	There is the need for awareness of civil responsibility				
C	ECONOMIC FACTORS AND SUPPORT INFRASTRUCTURE				
6	Revenue flow to cover the recurring cost of maintenance is a necessity				

APPENDIX D

SPECIAL STUDY:

WATER GOVERNANCE IN SEKYERE CENTRAL DISTRICT OF GHANA

The following questionnaire is part of a survey that is designed to ascertain water governance issues in Sekyere District of Ghana. The results of the survey will be analyzed as part of my Degree research work. Therefore, I assure you that any information that will be gathered from you will be kept confidential. Thank you.

INTERVIEW GUIDE FOR TRADITIONAL/COMMUNITY LEADERS

- 1) Name of community.....
- 2) Position held.....
- 3) How do people access water in this community?
Buy [1] Beg from community leaders [2] Free [3] Others (specify).....
- 4) In your opinion who owns the streams and rivers?
God given [1] Community [2] Government [3] Others (specify) [4]
- 5) Why do you think that way? (Briefly explain your answer to question 4)
.....
- 6) Are there any traditions or customs that govern access to and control of water resources (rivers and streams)?
Yes [1] No [2]
- 7) If yes, please list them.
 - a)
 - b)

8) Are there any by-laws governing access to and control of water felicities (wells, boreholes or piped water)?

Yes [1] No [2]

9) If yes, please list them.

a)

b)

c)

10) What form do they take?

Written [1] Verbal [2]

11) Who sets the by laws?.....

12) Who enforces the by-laws?

Villagers staying near the water point [1] Chief and community leaders [2]

Water boards [3] Others (specify)

13) Are the by-laws often revised?

Yes [1] No [2]

14) Do people in the community comply with the by-laws?

Yes [1] No [2]

15) If no, what charges are levelled against them?

a)

b)

c)

16) How have the traditional practices and customs regarding ownership and access to water resources affected community participation in water governance?

.....
.....

17) Which institution is mandated to protect water resources?

The Water Resource Commission [1] Community Water and Sanitation Agency [2]

WATSAN/Water Boards [3] No idea [4]

18) Which institution is mandated to establish water regulatory procedures?

The Water Resource Commission [1] Community Water and Sanitation Agency [2]

WATSAN/ Water Boards [3] No idea [4]

19) How do government laws governing water ownership and use of water resources affect community management of water resources?

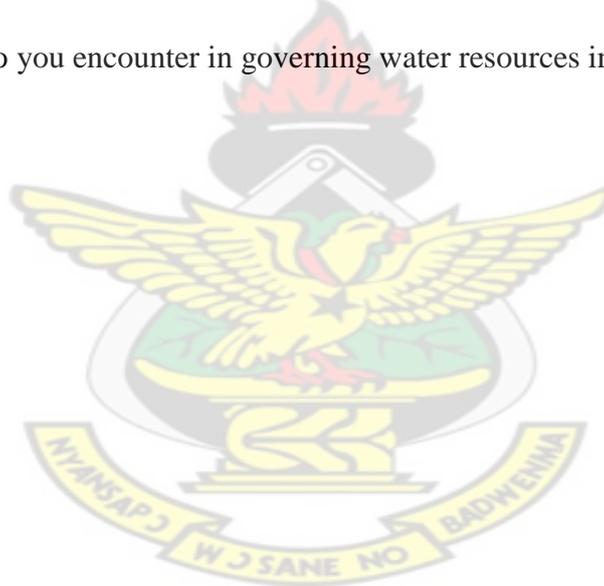
.....
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.....

20) What challenges do you encounter in governing water resources in this community?

a)

b)

c)



APPENDIX E

SPECIAL STUDY:

WATER GOVERNANCE IN SEKYERE CENTRAL DISTRICT OF GHANA

The following questionnaire is part of a survey that is designed to ascertain water governance issues in Sekyere District of Ghana. The results of the survey will be analyzed as part of my Degree research work. Therefore, I assure you that any information that will be gathered from you will be kept confidential. Thank you.

GENERAL INSTITUTIONAL INTERVIEW GUIDE

1. Name of institution.....

Complete the table below indicating whether you are satisfied or dissatisfied with the impact of decentralisation on ownership, access rights and allocation of management responsibility

No	ISSUES	RESPONSES		
		Satisfied [1]	Indifferent [2]	Dissatisfied [3]
1	Decentralisation policy implementation process as it relates to water development			
2	Ownership of the water facilities			
3	The governance structure and management of water			
4	Sustainability of Water Boards/Watsan Committee			
5	Strength of institutional linkages at regional, district and local level			
6	Sustainability of water facilities			

7) What are the roles of your institution in the provision of water services/ water governance?

.....

8) List the major challenges that you encounter in ensuring effective water governance at the local level?

.....

9) How can these challenges be overcome?

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APPENDIX F

CALCULATION OF SAMPLE SIZE

The sample size is calculated with the mathematical model propounded by the Air University of USA (Air University Sampling and Surveying Handbook, 1996: p 25).

Given the module,

$$n = \frac{NZ^2 * 0.25}{[d^2 * (N-1)] + [Z^2 * 0.25]}$$

Where, n =sample size, N =sample frame, d =precision level, Z =no. of standard deviation units corresponding to confidence level

But, $N=6981$, $d=0.1$ and $Z=1.96$

Substituting values into module,

$$n = \frac{[6981 * 1.96^2] * 0.25}{[0.1^2 * (6981-1)] + [1.96^2 * 0.25]}$$

$$n = \frac{6705}{63} = 147$$

Therefore, sample size is **147**.

CONFIDENCE LEVELS AND THEIR CORRESPONDING Z-FACTORS

CONFIDENCE LEVEL	Z-FACTOR
99.9	3.29
99.7	3.0
99.5	2.8
99.0	2.57
98.0	2.32
95.5	2
95.0	1.96
90.0	1.64
85.0	1.43
80.0	1.28

Source: Air University, 1996: 25