

**Water Access and Governance among Indigenous and Migrant Low Income Communities in the  
Greater Accra Metropolitan Area (GAMA), Ghana**

by

Elizabeth Koryoo Dapaah

B.A University of Ghana, 2011

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF  
THE REQUIREMENTS FOR THE DEGREE OF  
MASTER OF ARTS

in

THE FACULTY OF GRADUATE AND POSTDOCTORAL STUDIES  
(Resource Management and Environmental Studies)

THE UNIVERSITY OF BRITISH COLUMBIA

(Vancouver)

October, 2014

## **ABSTRACT**

Access to potable water remains a key concern for most developing countries, especially across the sub-Saharan African sub-region. Although countries such as Ghana have already declared success in attaining its MDG target of halving its population without access to potable water ahead of the 2015 target date, there are disparities in water access across the country. This disparity is notable in growing urban areas such as Accra, the national capital, where access to potable water remains a daunting challenge especially for many neighborhoods located in low income enclaves of the city.

Adopting a comparative approach, this research aims to elicit the everyday accessibility options and coping strategies of two low income neighborhoods; one indigenous (Ga Mashie) and one migrant (Madina), located in the metropolitan region of Accra. The study uses data from a two and half months of fieldwork conducted in both communities in Accra, Ghana. It includes a survey of 200 households in Ga Mashie and Madina, group discussions, and semi-structured interviews with local community leaders. Drawing on concepts of entitlement, social capital, vulnerability and water governance, the study analyzes the everyday lived experiences of water access in these communities.

Results of the study show that while there are qualitative differences in water access between both communities, they both rely on informal water vendors for their water supply. Also, among the many social problems in both communities, water was considered to be among their biggest concerns. However, this notion held by the respondents in both communities was not shared by local public officials in Ga Mashie, where officials discounted the existence of a water problem. Moreover, in some notable ways, Madina appears to be more resilient in times of water shortages than Ga Mashie, contrary to what this study initially hypothesized. In conclusion, this study suggests that care must be taken in proposals for water governance reforms in particular settings since different localities likely call for different responses. For a sustainable governance outcome, there is the need to promote models that tend to account for the roles and needs of different social groups at the local level.

## **PREFACE**

This thesis was entirely written by the author and the research questionnaire and interview protocol was designed with the supervision of Dr. Leila Harris and Dr. Hisham Zerriffi. The data was analyzed with Statistical Package for Social Sciences (SPSS) by the author.

### **Funding**

Funding and other support was also provided for this work by the Institute for Resources, Environment and Sustainability at UBC; The EDGES research collaborative at UBC; and the Social Science and Research Council of Canada (SSHRC Insight grant, *Experiences of Shifting Water Governance: Comparative Study of Water Access, Narrative, and Citizenship in Accra Ghana and Cape Town South Africa*, Principal Investigator L. Harris).

### **Research ethics approval**

This research was granted approval by the UBC Behavioral Research Ethics Board on June 7<sup>th</sup>, 2013. The certificate number of this ethics certificate is H13-00605.

## TABLE OF CONTENTS

<b>ABSTRACT</b> .....	i
<b>PREFACE</b> .....	ii
<b>TABLE OF CONTENTS</b> .....	iii
<b>LIST OF TABLES</b> .....	vi
<b>LIST OF FIGURES</b> .....	vii
<b>LIST OF IMAGES</b> .....	viii
<b>LIST OF ABBREVIATIONS</b> .....	ix
<b>ACKNOWLEDGEMENTS</b> .....	x
<b>DEDICATION</b> .....	xi
<b>CHAPTER 1: INTRODUCTION</b> .....	1
<b>1.1 Status of water access, delivery and governance in Ghana</b> .....	1
1.1.1 Governance challenges in relation to water access in Ghana.....	2
<b>1.2 Contextualizing access to urban water supply in low income communities: the problem</b> .....	4
<b>1.3 Selection and background of case study communities</b> .....	5
1.3.1 Introduction.....	5
1.3.2 Ga Mashie .....	6
1.3.3 Madina .....	11
<b>1.4 Description of socio-demographic background of study communities</b> .....	15
<b>1.5 Research questions</b> .....	19
1.5.1 Research hypothesis.....	20
<b>1.6 Theoretical background</b> .....	20
1.6.1 Introduction.....	20
1.6.2 Water governance .....	20
1.6.3 Entitlement theory, trust and homogeneity .....	22
1.6.4 Vulnerability and resilience in water related stresses .....	24
<b>1.7 Methodology</b> .....	26
1.7.1 Overview.....	26
1.7.2 Sampling and field work procedures.....	26
1.7.3 Research instruments .....	28

1.7.4 Challenges and limitations .....	29
1.7.5 Validity and reliability of data .....	30
<b>CHAPTER 2: DAILY NEGOTIATIONS FOR WATER: A COMPARATIVE ANALYSIS OF AN INDIGENOUS AND A MIGRANT LOW INCOME COMMUNITY IN ACCRA, GHANA .....</b>	<b>31</b>
<b>2.1 Introduction.....</b>	<b>31</b>
<b>2.2 Examining water access and supply patterns in Ga mashie and Madina.....</b>	<b>32</b>
2.2.1 General differences in sources of water supply between Ga Mashie and Madina.....	32
2.2.2 Primary sources of water supply in Ga Mashie and Madina.....	36
2.2.3 The role of water vendors in water access .....	38
<b>2.3 Importance of water among other community problems and perception about water access 45</b>	
2.3.1 Citizen’s ranking of water access relative to other problems.....	45
2.3.2 Local public official’s characterization and perception about water access .....	48
2.3.3 The role of governance in water access .....	53
<b>CHAPTER 3: FRAMING A COMMUNITY’S ENTITLEMENT TO WATER ACCESS IN ACCRA; A COMPLEX REALITY .....</b>	<b>57</b>
<b>3.1 Introduction.....</b>	<b>57</b>
<b>3.2 Results and discussion .....</b>	<b>59</b>
3.2.1. The role of socio-cultural entitlements in water accessibility between Ga Mashie and Madina .....	62
3.2.2 Entitlements related to socio-economic variables and effects on community water access .....	64
3.2.3 Entitlements related to the role of institutions and effects on community water access .....	65
3.2.4 Entitlements related to infrastructure and its effects on community water access.....	67
<b>3.3 Relationship between community water entitlements and vulnerability .....</b>	<b>68</b>
<b>3.4 Conclusion .....</b>	<b>74</b>
<b>CHAPTER 4: CONCLUSIONS AND POLICY RECOMMENDATION.....</b>	<b>75</b>
<b>4.1 Introduction.....</b>	<b>75</b>
<b>4.2 Summaries .....</b>	<b>75</b>
4.2.1 Understanding improved water access in low income neighborhoods: a re-examination of national/global standards.....	75
4.2.2 Understanding determinants of water access and related vulnerabilities in low income communities .....	77
4.2.3 The role of local governance in improving water access .....	78
4.2.4 Models for addressing water at the community level .....	81

<b>4.3 Conclusions and synthesis: policy directions</b> .....	82
<b>REFERENCES</b> .....	86
<b>APPENDIX</b> .....	94

## LIST OF TABLES

Table 1.1 Socio-Demographic characteristics of study communities.....	15
Table 2.1 Kendell's ranking of community problems.....	46
Table 2.2 Mann Whitney test for community problems.....	47
Table 2.3 Perceptions of community members' expectation of various actors for addressing their water needs.....	54
Table 2.4 Role of the community in addressing water problems.....	55
Table 2.5 Options for addressing community water problems.....	55
Table 3.1 (a) An entitlement matrix showing determinants of water access.....	59
Table 3.1 (b) An entitlement matrix showing determinants of water access.....	60
Table 3.2 Kendell ranking of perceptions on determinants.....	62
Table 3.3 Forms of Household/Communal Water Sharing.....	64
Table 3.4 Role of elections in water characterization.....	67
Table 3.5 Time spent getting water (In minutes).....	70
Table 3.6 Different forms of water burden between Ga Mashie and Madina.....	72
Table 3.7 Different forms of community vulnerability in relation to water.....	73

## LIST OF FIGURES

Figure 1.1 Map of Ga Mashie .....	7
Figure 1.2 Population trends of Ga Mashie .....	9
Figure 1.3 Map of Madina .....	12
Figure 1.4 Population trend of Madina from 1960-2010 .....	13
Figure 2.1 Differences in water access between Ga Mashie and Madina.....	34
Figure 2.2 Primary sources of water in Ga Mashie and Madina.....	37
Figure 2.3 Frequency of dependence on vendors.....	39
Figure 3.1 Coping strategies to access water in the absence of water from regular water sources for domestic use .....	61

## LIST OF IMAGES

Image 1.1 Male only focus group meeting in Ga Mashie.....	29
Image 2.1 Stored water in jerrycans along streets in Ga Mashie.....	40
Image 2.2 Water stored in polytank to be delivered to a vendor in Madina.....	41
Image 2.3 Water stored in polytank and ready for sale in Madina.....	41

## **LIST OF ABBREVIATIONS**

EDGES	Environment & Development: Gender, Equity, Sustainability
FGM	Focus Group Meeting
GAMA	Greater Accra Metropolitan Area
GAMADA	GA Mashie Development Agency
GSS	Ghana Statistical Service
GWCL	Ghana Water Company Limited
IMF	International Monetary Fund
JMP	Joint Monitoring Programme
LANMMA	La-Nkwantanang-Madina Municipal Assembly
MDG	Millennium Development Goals
MP	Member of Parliament
ODA	Official Development Assistance
PHC	Population and Housing Census
PPP	Public-Private Partnerships
PURC	Public Utilities Regulatory Commission (Ghana)
UBC	University of British Columbia
UNICEF	United Nations Children’s Educational Fund
WHO	World Health Organization
WSMP	Water and Sanitation Monitoring Platform

## **ACKNOWLEDGEMENTS**

I first of all want to express my utmost thanks to God Almighty, Jehovah for the grace and the provision made for me to be able to successfully begin and end my program.

I secondly want to thank my supervisor, Dr. Leila Harris for her unflinching support throughout my studentship. I am very grateful Leila. To my committee member, Dr. Hisham Zerriffi, thank you for the time and energy expended in guiding my thesis to the end.

I would also want to thank the Faculty of Graduate Studies, The Faculty of science, The Ghana Education Trust Fund (GETfund) and again, Dr. Leila Harris for the financial support that has seen me through to the successful end of my program.

I offer my gratitude to the faculty, staff (especially to Bonnie Leung), members of EDGES research team (especially to Lucy, Cynthia and Megan), the Zerriffi Group, all the research assistants who helped with my data collection and my fellow students at the Institute for Resources, Environment and Sustainability who have inspired me in various ways to continue my work in this field.

I owe particular thanks to Professor Jacob Songsore whose thought-provoking questions taught me to question more deeply and to write professionally. Special thanks are owed to my mum, my siblings Leonard and Deborah Dapaah who have supported me throughout my years of education, morally.

Last but not the least, I would like to thank my special friend and husband, John Boakye-Danquah for all the energy and time spent to critique, edit, and comment on my work.

**DEDICATION**

*To my mum*

*Veronica Naa Morkor Tetteh*

## CHAPTER 1: INTRODUCTION

### 1.1 Status of water access, delivery and governance in Ghana

Ghana has already declared success on its MDG target of reducing by half the proportion of its citizens without access to improved drinking water sources <sup>1</sup> by 2015 (WSMP, 2009). Even before the target date of 2015, a significant increase in access to improved drinking water has been recorded countrywide; moving from 53% in 1990 to 86% in 2010 (UNICEF and WHO, 2012). Moreover, access to improved drinking water in urban areas also increased from 84% to 91% over the same period. However, access to piped water on premises decreased both nationally and in urban areas from 16% to 18% and 41% to 33% respectively over the same period (UNICEF and WHO, 2012).

Notwithstanding the overall success with coverage of improved drinking water sources across the country (both urban and rural), equitable access to potable water remains one of the key sustainability challenges in Ghana. For instance, studies by Songsore (2008; 2009) show that in the capital city of Accra, there are huge spatial disparities in access to potable water. The Ghana Water Company Limited (GWCL), the sole regulated provider of piped water to all urban areas in Ghana, is able to meet only 46.5% of water demands across the nation (GSS, 2012). In the metropolitan capital city of Accra 64.4% of residents have access to pipe-borne water (both in-house and in-compound), while the rest depend on other water sources mostly provided by informal private vendors (GSS, 2012). Even with this, residents with access to piped water have to contend with fluctuations and erratic supply that can last for weeks. Ainuson (2010), estimates that, in Accra only 25% of residents with piped water access have 24 hour water supply. Another 30% access water supply on average 12 hours a day, for five days a week while the remaining access water supply between one to two days per week.

Within the city of Accra, what is of grave concern are the over one third of residents who either have no access to direct regulated piped water supply, depend on secondary and tertiary suppliers and who buy water by the bucket. Mostly, such residents are located in poor or low income neighborhoods or at urban fringes where legal barriers (e.g. lack of access to land title), utility related barriers (e.g. redundancy of utility staff) technical and financial barriers (costly reengineering) prevent them from having access to

---

<sup>1</sup> The proportion of the population with access to improved drinking water, according to the WHO/UNICEF Joint Monitoring Programme (JMP), is an indicator expressed as the percentage of people using improved sustainable drinking water sources or delivery points such as household connection, public standpipe, borehole, protected dug well, protected spring, and rainwater collection.

piped water (WSA HLF, 2013). A key question to ask is how then do residents within such neighborhoods without access to piped water meet this basic need?

Hence, the overarching aim of this study is to compare and contrast the everyday lived dimensions of water access in two selected low income neighborhoods characterized by different socio-cultural attributes and different water infrastructure. Thus, by comparing two different neighborhoods (in terms of their location in relation to piped water infrastructure, physical infrastructural development, homogeneity/heterogeneity of communities, sources of water) in the city of Accra that face challenges in water access, I assess communal and household water accessibility options with the expectation that access in these communities might differ. I envision that, assessing the everyday lived and differentiated experiences of poor people challenged by different dimensions of water access can provide new insights that can inform bottom up approaches to water governance and improve water access or governance processes.

#### 1.1.1 Governance challenges in relation to water access in Ghana

In most developing countries, government responses to urban water provision challenges have been to seek technical experts, encourage increased capital investment and to improve efficiencies through Public-Private Partnerships (PPP) (Ainuson, 2010) geared towards the development of large piped water systems. For instance, almost two-thirds of total official development assistance (ODA) for drinking water and sanitation is targeted to the development of large piped water systems globally (WHO, 2010). Yet these may not necessarily represent optimal investment for maximum coverage nor are they typically focused on those in greatest need (McGranahan and Satterthwaitte, 2006; WHO, 2010). In Ghana, the adoption of PPP in urban water delivery systems is symptomatic of what other countries in the developing world have experienced or are going through as they were either coerced with its perceived benefits or compelled by multilateral development partners i.e. the World Bank and IMF, as a form of aid conditionality (Harris, 2013). According to McGranahan and Satterthwaitte (2006), the records have shown that the adoption of PPP has so far failed to reach out to the poorest and marginalized groups in urban areas. This is because communities in dire need of investments in water services are often the least attractive to private investors—thus they are often excluded from stipulations of private contracts.

Since water is essential to life, whether the poor are formally served or not they will find and use water (Evans, 2007). Unfortunately, because of the low socioeconomic status of the poor, the routes for accessing water whether through informal water vending services or shared connections have often enhanced their vulnerability. They are faced with a relatively high cost of water delivered by vendor

services compared with the city's supply, delays in accessing water and reduced water quality (Songsore, 2010; WSA HLF- 2013). For instance in Accra, Ainuson (2010) notes that with no regulatory oversight of the activities of small scale water producers and no obligation to follow the directives of the utility regulator, the price for water charged by small-scale water producers are set without any controls while consumers also have no information on the source and quality of water delivered to them. Based on the GWCL tariffs, it is estimated that, 35 litres of water (which should cost GhS<sup>2</sup> 0.0145 cedis) costs between an average of Ghc 0.07 and 0.25 in low income and underserved communities (Ainuson, 2010). Again, between 2007 and 2014, the price of sachet water<sup>3</sup>; which has become an ideal water source for supplementing water supply in both low and high income communities (Stoler et al., 2013; Morinville, 2012; WSMP, 2009), moved from Ghc 0.03 pesewas to Ghc 0.20 pesewas<sup>4</sup> representing more than 500% increase over a period of seven years. In essence, often residents of disadvantaged urban neighborhoods have to pay more for water than residents in other parts of the urban area with piped water presenting clear advantages to alternative water services despite the necessity of their operations in many areas.

Recent findings from extensive field work undertaken by Morinville, (2012) and Peloso & Morinville (2014) in some poor neighborhoods in urban Accra shows that, often, the poor have evolved accessing water in diverse ways ranging from shared connections, informal resale and vending and sometimes through illegal tapping of pipelines. Hence, the majority of the urban poor who are unable to access formal piped water and often rely on multiple informal water vending services in different neighborhoods (Songsore 2010; Ainuson, 2010) calls for a governance system that favours vertical disaggregation of roles and responsibilities, a different approach from the 'large piped system or mature utility' model often pursued by government and supported by development partners (WHO, 2010). In Accra, the diverse sources through which consumers access water suggest that the current water delivery models are most likely to be delivered effectively by more than one service provider (Peloso & Morinville 2014) compared to just one utility provider. Evans (2007) proposes that the conventional model of a single utility delivering water to the tap in the house could be replaced by a supply chain comprising utility, local government, small private providers, civil society organizations, and/or the household itself. Yet, the continued focus on providing water through the mature utility model means that the vital link between informal water access and the existing public sector models for providing water at the municipal level is

---

<sup>2</sup> Ghanaian Cedi (GhS) is the currency of Ghana. At the current exchange rate on the 9th of October, 2014, 1 GhS= 0.35 CAD

<sup>3</sup> Sachet water is a bag of water (500 ml) often sold cold by vendors in the streets and in small shops in the city.

<sup>4</sup> Derived from (Stoler et al. 2012a; Ghana News Agency 2011 as cited in Morinville, 2012; myjoyonline.com.

lost. These two models have been poorly understood and rarely articulated in policy. As a result, real service delivery routes that poor people use have not historically been well documented, understood or embedded in policy (Evans, 2007). Thus, what is needed is to examine and understand in detail water access routes among the poor which are controlled by numerous factors. This may include but not limited to their location within the city in relation to piped infrastructure, existing socio-cultural characteristics or social capital, community or individual entitlements including income and level of education. In the following section, I identify the research problem specifically as it relates to my study sites and why the chosen communities are a good fit for my analysis and this research.

## **1.2 Contextualizing access to urban water supply in low income communities: the problem**

Over the years, while access to improved drinking water in urban areas in Ghana has improved substantially based on the MDG progress report, what is defined as improved water access, the ways in which they are delivered and used vary considerably both within and between localities in the city. Generally, those excluded from the supply of water from the GWCL are the households or individuals located in areas of the city that are characterized by poor or absent planning, high population density, poor quality housing, and lack of or ambiguous tenure. Yet, in such communities, access to water is not ubiquitous and normally involves diverse coping strategies which at the neighborhood or community level could be a function of the physical location of the community in relation to piped water infrastructure (Ainuson, 2010; Evans, 2007) community led initiatives (Ainuson, 2010), population density as well as existing governance systems (Meybeck, 2003). Thus in Accra, it is not appropriate to categorize access to water in all low income communities as the same. Building on this, I argue for the case of Accra that it is not appropriate as is often done, to categorize low income communities as one vulnerable group in terms of water accessibility and then proceed to offer same solutions to their water problems. By using the term vulnerability or vulnerable in this work, I refer to the susceptibility of consumers to adverse effects of the water situation in their community, i.e. intermittent supply (rationing schedule), high cost, time spent in getting access to water, in their everyday experiences of getting access to water etc. . It is important to understand and recognize the diversity of water access routes across various communities and how they are shaped by existing socio-economic, infrastructural and cultural conditions. As noted by Amin (1996, 327), civil society is an arena for social contestation where power struggles exist and can affect which groups control which resources. Thus, even in areas classified (or considered) as low income neighborhoods, some may be more vulnerable than others in terms of water accessibility.

Therefore I explore the notion that having good infrastructure and largely homogenous cultural/ethnic ties enhances communal organisation and may enhance access. The Oxford Advanced Learners Dictionary (online) defines access to something as “the opportunity or right to use something or to see somebody/something. Drawing from this definition of access, I use access in this thesis to mean the process of getting water from a source for use by consumers (respondents/citizens). Some studies have suggested that social and economic homogeneity can affect the emergence and sustenance of collective action (Singleton and Taylor 1992) by influencing the outcome of collective action and the number of social ties and norms that a community can draw upon in building cooperation in times of crisis (Subramaniam et al., 1997). Social homogeneity may relate to people from the same community, ethnic and kinship group, while economic homogeneity refers mainly to groups with same or similar income.

According to Lowdermilk et al., (1978) the cohesiveness of the community, including its wider network of connections, its social capital, will both act as a counterweight to the powerful professionals within the system and also complement their input, especially in terms of resource mobilization. Yet, in a complex urban environment, access to resources such as water is not only determined by the network of social relations but also how particular groups or individuals gain access to and control over resources. Sen uses the entitlement theory to draw attention to how particular groups or individuals gain access and control over resources in times of crisis (Sen, 1981). According to Sen, a person’s “entitlement set” may range from a “full range of goods and services that he or she can acquire by converting his or her “endowments” (assets and resources, including labour power) through “exchange entitlement mappings”. Having a “commodity bundle” of ownership rights and endowments (income, land ownership, education etc.) will an individual be able to acquire “sufficient access to resources” (Sen, 1981).

### **1.3 Selection and background of case study communities**

#### **1.3.1 Introduction**

This section gives the historical development of the selected communities and outlines the rationale for their selection. It discusses issues of the evolution of the selected neighborhoods on the landscape of Accra, their access to social services, location and other socio-economic issues. It is important to set out the histories of these communities tracing them through the time of their existence into their present state because it helps to set out the uniqueness of each community, their potential strengths and weaknesses and how these inform a particular situation they may be facing currently. This background information

sets the bases on which some of the key differences in water accessibility are identified and thus makes it a very important component of this comparative research.

### 1.3.2 Ga Mashie

Many indigenous communities have historically settled and lived in what are now city centres. Ga Mashie also called Old Accra represents just one case in point (Razzu, 2004). Ga Mashie is principally inhabited by the Ga's, of the Ga-Adangbe tribe, although a considerable number of non Ga's reside in the community as well as other foreign groups. It is still disputed whether the Ga people settled in the present area migrating from other regions in the late 15th or early 16th Century, or they had been present in the area from at least the middle Iron Age (Quarcoopome, 1993). However, Field (1940) notes that, Ga Mashie probably became the centre of Ga people only after 1680, when a war against the Akwamu (a sub group of the Akan ethnic group) forced them to find refuge under Dutch protection around the present-day Ussher Town. A map of Ga Mashie is shown in Figure 1.1

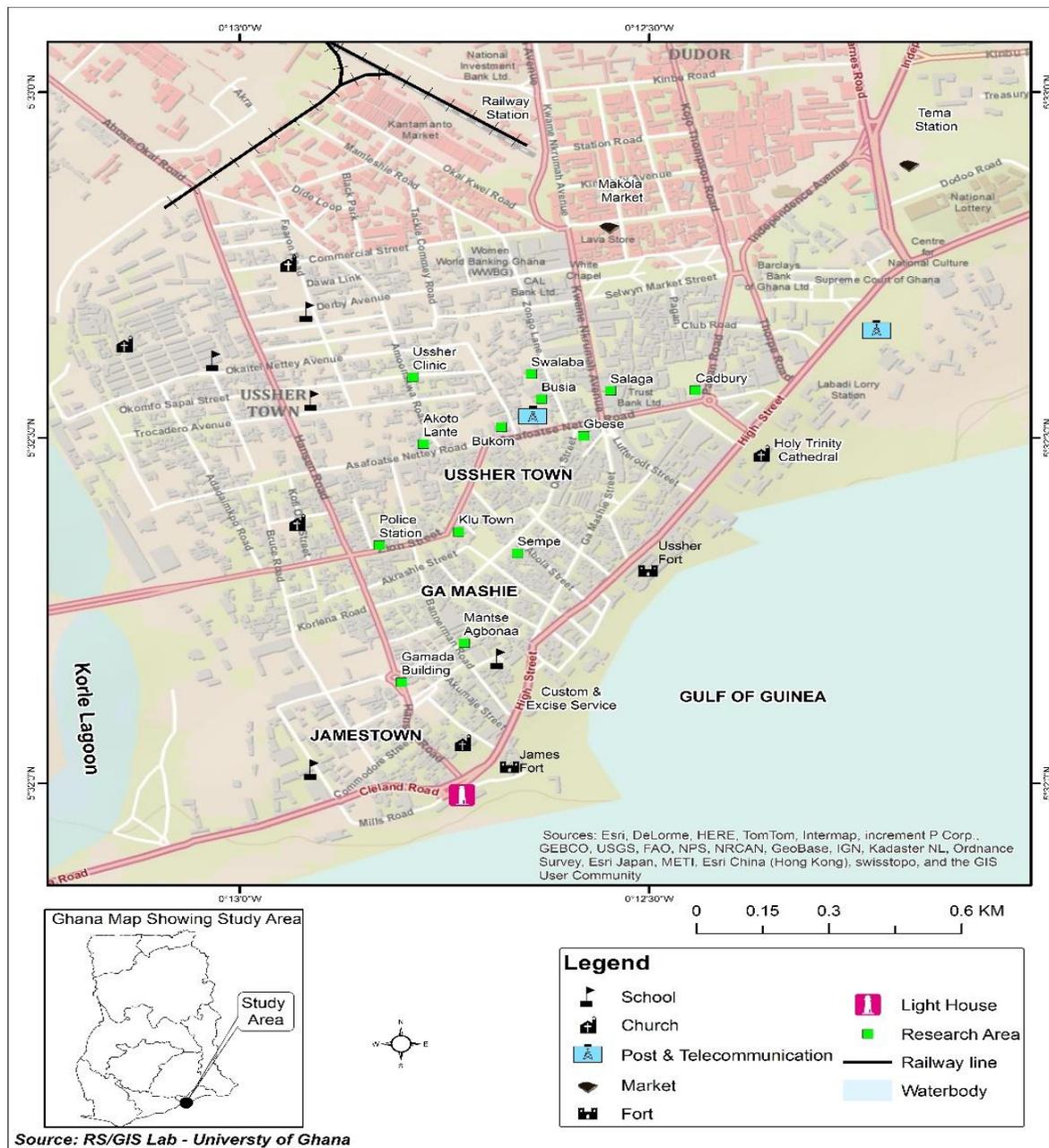


Figure 1.1 Map of Ga Mashie. The green points on the map show the sampling site.

(Source: RS/GIS Lab, Department of Geography and Resource Development, University of Ghana. “Map of Ga Mashie,” March 19<sup>th</sup>, 2014; reprinted with permission)

The people of Ga Mashie had their first contact with Europeans in the 16<sup>th</sup> Century and later the 17<sup>th</sup> Century through trade and later colonialism (Odotei, 1991). The two main European groups that occupied the area were the British and the Dutch. The British occupied Jamestown i.e. British Accra and the Dutch occupied Ussher Town which is known as Dutch Accra. This period marked an important point in the

history of Old-Accra as it flourished as a trading and administrative centre. A multiplicity of factors accounted for the flourishing economy of Ga Mashie during the early period of colonial rule. Firstly, its strategic location made it a commercial as well as industrial centre in the emerging colonial economy. The location of a harbor along its eastern coast boosted business and eventually the economy since most of the male indigenes were fishermen while the women were fishmongers. Besides, most European merchants that operated in the colonial economy built their warehouses along the coast that added to the vibrancy of the local economy and provided job avenues to a number of people who lived in the area. Moreover, the transfer of the colonial capital from Cape Coast to Accra in 1877 had an important impact on the city. This historic development increased the town's historical role as well as the Ga officeholders' importance in acting as brokers between Europeans and Ghanaians. Parker (2000) notes that, this historic development added to the effects determined by the transition from slave trade to legitimate commerce, which had opened up new opportunities for the accumulation of wealth like never before in the local economy. With Accra as the new capital in then colonial Ghana, the British started to plan the physical growth of Accra largely through the development of major infrastructure (Quarcoopome, 1993). The Korle-Bu Teaching Hospital (Ghana's biggest hospital) was built to initially cater for the health needs of the European population but was later opened up to the local population. These factors among others encouraged migration to Accra, boosted trade, enhanced livelihood opportunities and stabilized the local economy.

Despite the earlier flurry of growth, Ga Mashie experienced a number of catastrophic events that led to the collapse of its economy from which the community suffers till date. These factors are structural, tied to years of neglect and are aided in part by the inability of community members themselves to affect any change (Dapaah, 2011). First, when the colonial government moved the capital city from Cape Coast to Accra in 1877, the city started to grow and spread not only to the west and east of Old Accra but also northward. This was accompanied by the growth of the population. The population of old Accra moved from 19,999 in 1891 to 38,048 in 1931 and 135,929 in 1948 (Census Reports, 1891, 1931, 1948; cited in Mahama et al., 2011). The increase in the population of the area came with severe constraints on social services such as water as well as in social vices. Moreover, the area was heavily hit by the bubonic plague in 1908 with devastating consequences. This forced the colonial government to indiscriminately demolish many houses. This had very negative effects on the population as it destabilized most households (GAMADA, 2006). Most of the displaced people had to move and stay with other relatives whose houses had not been demolished. This has been noted as the most significant contribution to the emergence of crowding in houses and rooms in the community. Furthermore, the earthquake of 1939 had a destructive effect on Ga Mashie, re-settling some residents outside the community. It is suggested that most of the

rich and high-class in society then living in the area decided to move out to the new developing residential areas in the north of the city, generating a detrimental outflow of wealth from the locality (GAMA, 2007).

After independence, in 1962, the new independent government decided to move the harbour activities from Ga- Mashie to Tema, 40km to the east of Accra. As a result, Old Accra lost a strategic source of economic activity that has affected its development till date. The relocation of the harbour made the bulk of fishing activities, which include buying and selling, a more viable economic activity in Tema than in Ga Mashie (GAMADA, 2007). Population increases in the absence of planning and expansion in social services is a major challenge in Ga Mashie (Dapaah, 2011). Ga Mashie has a land size of 0.98 square kilometres (GAMADA, 2007). Ga Mashie's steady increase in population can be attributed both to natural growth and in- migration (Quartey-Papafio, 2006 cited in Mahama et al., 2011). Figure 1.2 shows the population trends in Ga Mashie between 1880 and 2010.

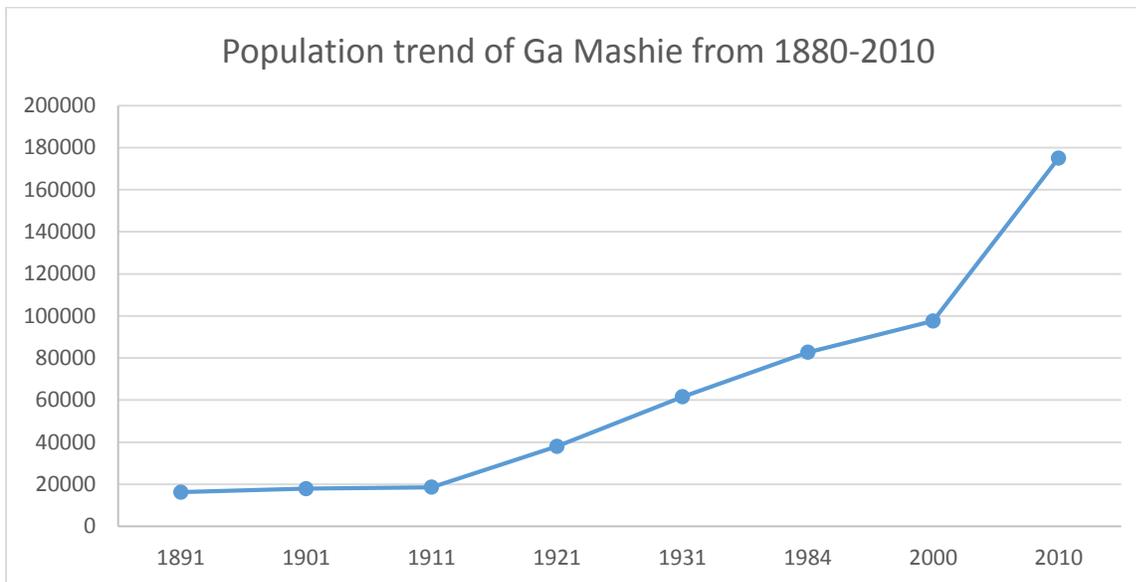


Figure 1.2 Population trends of Ga Mashie

(Source: Derived from GSS, 1984, 2000 and 2010; Derived from Mahama et al., 2011)

Currently, Ga Mashie represents a typical vulnerable community where environmental, sanitary and housing problems are prime concerns. Estimates show that, of the 1,553 houses available, 1,066 are in poor condition, while 96 are run-down and too risky to house people (GAMADA, 2005). Thus conditions in Ga Mashie illustrate the severity of the housing crisis facing many cities of the developing world (UNCHS, 1996); a consequence of population growth and poverty (GAMADA, 2005). In Ga Mashie,

most of the housing units are compound houses that belong to families (Quarcoopome 1992, Dapaah 2011). Unfortunately, most of these houses have not seen any physical expansion after years of population growth. As such, households are crowded in these compounds ranging between 11-20 persons per compound (Dapaah, 2011). Moreover, room crowding is a major issue. The average number of people in most of the rooms surveyed was above 3 persons as against the World Health Organization (WHO) stipulated standard of between 1.8 and 3.1 persons per room (cited in Dapaah, 2011).

Ga Mashie was selected for a number of reasons that are beneficial to this comparative research. First, it is an old city centre (its origins precedes colonial rule) and is one of the oldest neighborhoods inhabited by the indigenous settlers of Accra. The neighborhood was probably among the first suburbs to have access to potable water due to its strategic location as it was at the centre of colonial trade and administration. Unfortunately, as the city of Accra expanded, there was the tendency to focus on the provision of social services including water in new peri-urban areas that has no piped connection. As a result, the existing water infrastructure in Ga Mashie has not seen any major improvement since time and years of population increase has put a considerable strain on its water delivery systems. While the GAMA remains the richest metropolitan region in Ghana, its indigenous core population is in a state of decline in terms of access to social services including water (Dapaah 2011; Fieldwork, 2013). Thus, it is important that, as a matter of equity Ga Mashie is given a special consideration. Besides, it is the only known indigenous community within the heart of the city that has widespread documentations of its demographics and has also had considerable attention from civil society groups.

There are no explicitly known indigenous rights in Ghana especially relating to access to social services. Also, the UN Declaration on the rights of Indigenous People does not include anything directly on the provision of potable water to indigenous communities. However, in Article 32 (2) it states that “States shall consult and cooperate in good faith with the indigenous peoples concerned through their own representative institutions in order to obtain their free and informed consent prior to the approval of any project affecting their lands or territories and other resources, particularly in connection with the development, utilization or exploitation of mineral, water or other resources (UN, 2008, p.12). It is therefore important to understand how the water needs of this old indigenous neighborhood situated at the heart of the most urbanized part of Ghana and dwarfed by richness is coping in terms of water accessibility.

### 1.3.3 Madina

Historically, Madina was founded in 1959 by Muslims who were evicted from the center of Accra as well as migrants from Northern Ghana (Gough et al., 2003). According to Sackey and Badru (2013), the original name of the neighborhood was supposed to be New Nkwantanang. They further suggest that, the name Madina arose because the neighborhood became a place of refuge for Muslim migrants. In the 1960's Madina was known as the largest "Zongo" of Accra. Zongo is a Hausa term which means camping place of travelers but was used by the British colonial administration to refer to any segment of a town where Muslim traders lived. Figure 1.3 shows a map of Madina.

During the 1960's Madina was largely settled by two northern migrant social groups. The first group is composed of descendants of migrant groups from the Sahelian region in Nigeria and francophone West Africa. These include the ethnic groups of Busanga, Fulani, Gao, Kotokoli, Losso, Mossi, Wangara and Zambrama. The second group was made up of predominantly Muslim migrants from northern Ghana. This group is made up of ethnic groups such as Dagomba, Mamprusi, Nanumba, Gonja, Wala, and Kassena. In the middle of the 1960's a third social group from southern Ghana mostly Akans and Ewe's also moved to Madina.

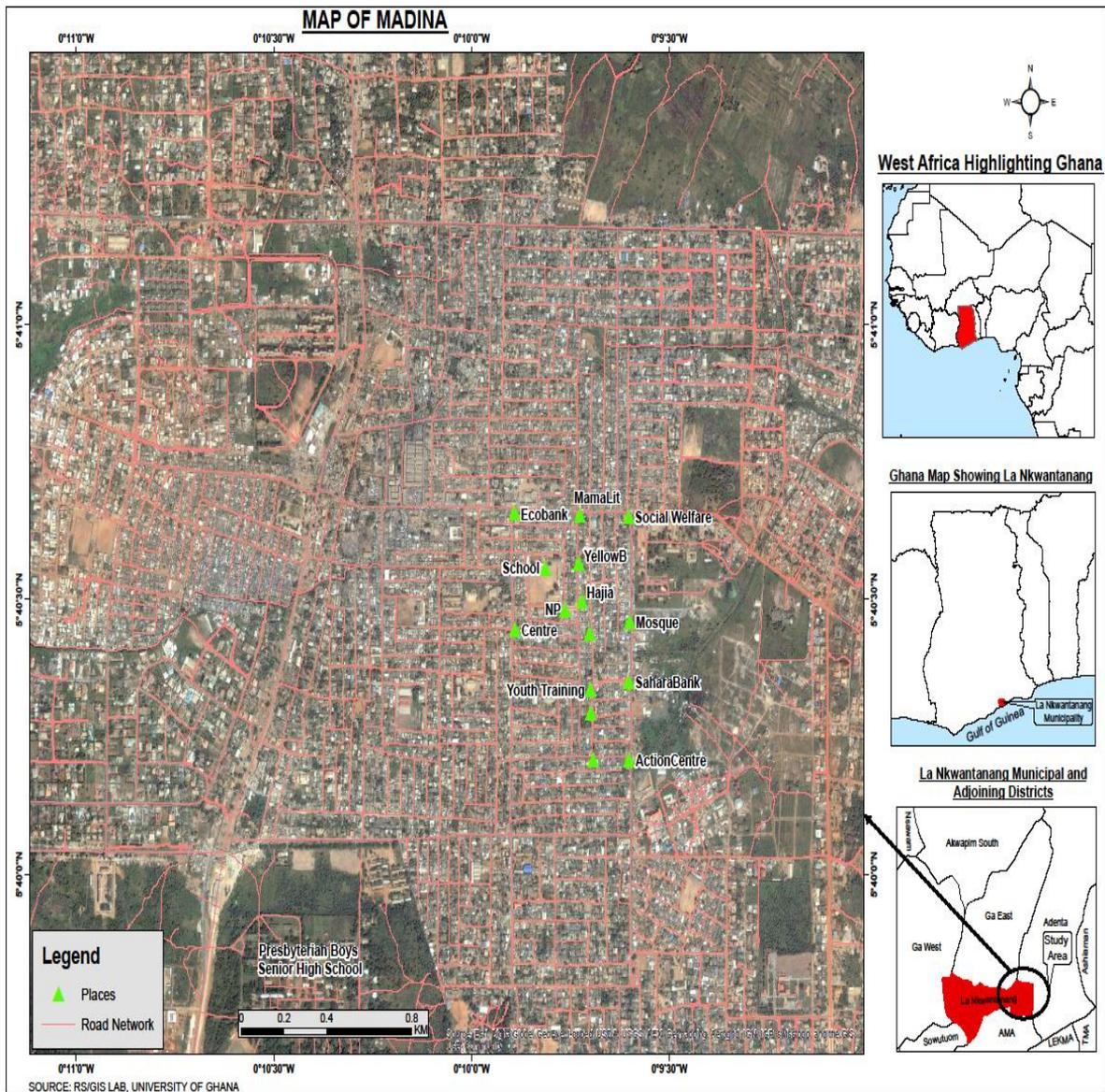


Figure 1.3 Map of Madina. The green points on the map show the sampling site.

(Source: RS/GIS Lab, Department of Geography and Resource Development, University of Ghana. “Map of Ga Mashie,” May 31st, 2014; reprinted with permission)

The economic hardships of the 1970’s and 80’s compelled more low income groups particularly new migrants in the city of Accra to move to Madina due to need for relatively low cost residential accommodation. Currently, Madina also hosts a multicultural population attracting students from the University of Ghana and other educational institutions in surrounding areas. The neighborhood of Madina also functions as a dormitory town for workers who commute to central Accra and is now the tenth largest

settlement in the country (Schandorf et al, 2012). Madina is one of the fastest growing settlements in Ghana. Figure 1.4 shows the population trends of Madina from the 1960's to 2010.

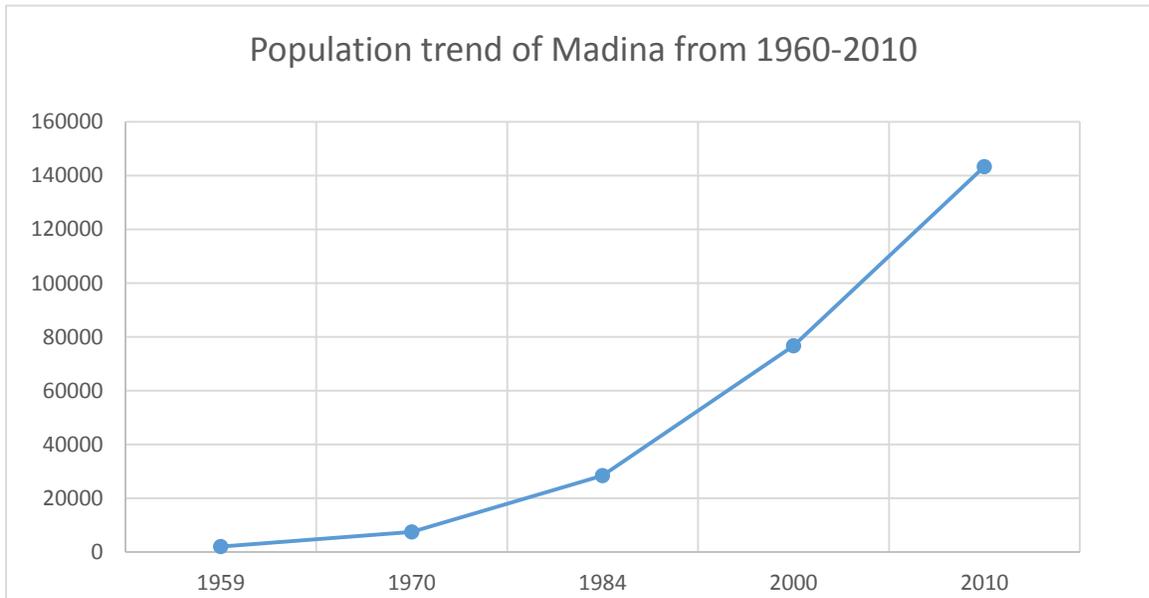


Figure 1.4 Population trend of Madina from 1960-2010

(Source: Derived from GSS, 2000 and 2012 and Berry, 1960)

Characteristically, Madina has a busy market as well as shops and workshops in which people from most parts of the city of Accra commute daily to make a living from selling and trading. Most houses are in the form of compounds inhabited by several low income households whilst other housing types such as 'self-contained' or villas are generally inhabited by wealthier households (Gough et al., 2003). It covers an area of about 5 km<sup>2</sup> and is one of the over 65 settlements in the La-Nkwantanang-Madina Municipal Assembly (LANMMA), a district in the Greater Accra Region of south-eastern Ghana. The LANMMA was established by Legislative Instrument 2030 in June 2012. It is located about 16 km from the centre of Accra but still within its urbanized area (Gough et al., 2003). Madina is the largest and highly ranked community within the LANMMA, meaning it has the largest number of basic facilities and services (Agyei et al., 2011). Yet, the whole of Madina is inadequately serviced in terms of water supply, waste management and sanitation (ibid). Most households rely on buying water from neighbors (vendors) who are served by tanker services. Residents thus have to purchase water from those with storage tanks or travel outside the settlement to purchase water (Gough et al., 2003).

The origins and profile of Madina on the other hand presents a different case compared to Ga Mashie. Madina is a fairly recent neighborhood of post-independence Ghana. Currently it is noted as one of the fast-growing neighborhoods in Ghana and its predominant migrant settlers reflect the changing dynamics of the city of Accra. Also, Madina has a peculiar limitation in relation to supply of water in the sense that the community is not connected to the city's main water supply lines unlike Ga Mashie. In reality, water is sourced through a number of interventions, mostly secondary (this water is not ultimately sourced by vendors but redirected and resold from the pipeline managed by GWCL) means from vendors. In addition, there is also some bottom up community level efforts to solve its water needs. Thus, Madina represents a neighborhood in transition and therefore it is interesting to understand how the everyday dimensions of water access are delivered. The nature of Madina as a migrant community as set against Ga Mashie, which is predominantly indigenous, could bring out some key differences in terms of the social make-up of these two communities which are unique and could contribute to the existing knowledge and evidence on access to water in low income communities.

In the next two chapters; 2 and 3, I use aspects of the concept of social capital (trust) and entitlements (endowments) to explain how access to water in both communities might differ and how this can make one community less vulnerable to water supply fluctuations than the other. I come into most parts of my discussions and arguments based on concepts such as entitlements, elements of social capital including Trust and Homogeneity vulnerability and resilience. I would like to clarify that I did not undertake a vulnerability study, social capital analysis, entitlements study or in-depth comparative study on resilience in these two communities. Rather, I asked respondents questions regarding these concepts and inferred from these concepts to aid in my analysis. For instance, I asked respondents if there were any category of people that were mostly affected by shortages in water supply than everyone else. I used the responses (data) from respondents to write on these concepts using the definitions I employ in this thesis as my points of departure. However, based on the literature and my data, I employ these concepts to make meaningful discussions that will help in getting to the main objective of my thesis and also to answer my research questions. I explain these concepts and what I take each of them to mean further in section 1.4 on theoretical backgrounds as well as in the various sections when each of them are used for further analysis. In the next section, I state the research questions on which I build this thesis.

Having discussed the historical conditions of my study communities, in section 1.3 I set out to provide some socio-economic characteristics of my study communities based on my field survey.

## 1.4 Description of socio-demographic background of study communities

Table 1.1 provides a summary description of the socio-demographic characteristics of respondents in the two study communities. These include gender composition, age, and ethnic origin. Other characteristics discussed include levels of educational attainment by respondents, housing type and toilet facilities.

Table 1.1 Socio-demographic characteristics of study communities

	Community	
	Ga-Mashie (N=120)	Madina (N=80)
<b>Gender of Respondents (%)</b>		
Male	39.2	46.3
Female	60.8	53.8
<b>Age</b>		
Mean	38.80	35.33
Minimum	18.00	18.00
Maximum	76.00	65.00
<b>Size of Household</b>		
Mean	4.68	6.26
Minimum	1.00	1.00
Maximum	40.00	33.00
<b>Ethic origin (%)</b>		
Ga-Adangbe	78.3	16.3
Mole-Dagbani	1.7	10.0
Ewe	3.3	22.5
Akan	13.3	42.5
Foreigner	.8	3.8
Others	2.5	5.0
<b>Level of education (%)</b>		
None	13.3	8.8
Non-Formal Educ.	1.7	0.0
Primary	10.0	3.8
Junior Secondary School	41.7	23.8
Senior Secondary School	26.7	30.0
Comm/Voc/Technical	5.0	11.3
<i>Post Sec./Nursing/Polytechnic</i>	0.8	12.5

Source: Field Work, 2013.

Table 1.1 Socio-demographic characteristics of study communities

Occupations (%)	Community	
	Ga Mashie (N=120)	Madina (N=80)
I am unemployed and not looking for work	14.2	7.5
I am unemployed and looking for work	6.7	12.5
I work full time for wages	13.3	10.0
I work part time for wages	15.0	18.8
I work informally form time to time	45.0	23.8
I study full time	3.3	15.0
I study part time	.8	1.3
Others	1.7	11.3
<b>Housing types</b>		
Compound	87.5	57.5
Detached	1.7	11.3
semi-detached	5.8	16.3
Apartment	4.2	13.8
Others	0.8	1.3
<b>Toilet facility (%)</b>		
Water closet	19.2	52.5
Pit latrine/KVIP	4.2	37.5
Public toilet	76.7	7.5
Others	00.0	2.5

Source: Field Work, 2013.

As shown in Table 1.1, in both communities, more than half of the respondents were female. In Ga Mashie, females constituted 61% whilst males were about 39%. In Madina, while 54% of respondents

were female, 46% were male. The high percentage of female respondents was purposefully skewed to enable more female respondents since they constitute the primary users of water at the household level. As well, the high female respondents in Ga Mashie reflect the majority of female-headed households in the community (Fayorsey, 1995) as well as time of the day used for conducting the research and the fact that women were caretakers in terms of household chores that required the use of water.

The age characteristics of respondents show that the population in both communities is relatively young, with 38.8% in Ga Mashie and 35.3% in Madina of those sampled under 40 years. This is consistent with the regional average which shows a mean age of 26 (GSS, 2013). In terms of family size, it is quite interesting to note that Madina had a relatively large family size per household, with a mean of about 6 persons while Ga Mashie had an average of about 5 persons per household. This is consistent with studies that show that, across the city of Accra, the mean household size is 4.75 persons per household (UN Habitat, 2011) while that for slum areas in general and specifically Ga Mashie is 5.5 persons. Yet, in Ga Mashie an average of two households may occupy a single room, with average estimated room occupancy of 10.6 (ibid). This is also explained by the presence of people who sleep outside in the open. Overcrowding is a physical characteristic in the street and at the compound and room level, particularly in Ga Mashie.

The educational level of respondents' in both communities shows that the majority of respondents had attained more than primary education. In Ga Mashie, 41.7% had attained JSS education while 26.7% had also attained Senior Secondary Education and in Madina 23% had attained JSS education and 30% had also attained SSS education. Also, in Ga Mashie, 0.8% had attained University education while in Madina 10% of the population had attained University education. The relatively high level of respondents with university education in Madina might be linked to its proximity to the University of Ghana and the University for Professional Studies where most students and workers of the university take up private residency. The educational level in Ga Mashie, is relatively low compared with Madina since 13.3% had no formal education while in Madina 8.8% also had no access to formal education. The situation in both communities is slightly better than the national averages. In the whole of Ghana only about 1.7% of the population have attained a University education while 17.9% and 7.8% had attained Junior and Senior high (both secondary) levels respectively. As many as 23.4% had never attended any form of educational institution in their lives (GSS, 2012, p.49).

Most parts or neighborhoods in Accra show portraits of ethnic diversity where economic segregation is the organising force underlying residential segregation (Agyei-Mensah and Owusu, 2009). In this study, while the ethnic background of respondents in Madina conforms to the pattern of ethnic diversity, Ga Mashie on the other hand does not. In Ga Mashie out of the four main ethnic groups in Ghana (Akan,

Mole- Dagbani, Ga Adanbge and Ewe), almost 80% of the respondents belong to one ethnic group; the Ga Adanbge ethnic group (Table 1.1). In Madina, among the four main ethnic groups, none of the ethnic groups constitute half or more than half of the population sampled. This suggests that Madina is more ethnically diverse and heterogeneous as opposed to Ga Mashie which is relatively homogeneous in terms of ethnicity. Thus, it is important to consider how these differences would affect the governance of water including community mobilization.

Table 1 shows housing characteristics, access to toilet facilities and occupational opportunities in both study communities. As shown in Table 1, compound houses remain the dominant housing type in both communities. This is consistent with national and regional trends as 51.5% and 53.9% of housing in Ghana and Accra respectively are in the form of compound houses (GSS, 2013). Yet, in Ga Mashie 87.5% reported living in compound houses which is higher than the national and regional rate as well as that of Madina. Compound houses are generally a cluster of houses that accommodates the extended family in several dwellings (sometimes walled). The houses are often arranged into clusters attached to each other through alleyways. In Ga Mashie compound houses often accommodate between 10 to 20 people or more and could contain more than five nuclear families (Dapaah, 2011; Mahama et al., 2011). Compound houses are one of the characteristic housing features of most low income areas in the GAMA and especially in places like Ga Mashie (Konadu-Agyemang, 2001). As an indigenous community, most people remain in homes where they have lived from birth together with their kinsmen and their own nuclear families. As a result, in Ga Mashie, there is a severe strain on housing characteristics with compound and room crowding a major social problem (Konadu-Agyemang, 2001). Crowding has severely affected the access, use and management of services or utilities such as water, electricity and toilet facilities in most house compounds (Dapaah, 2011). Physical housing conditions in Madina appear relatively better compared with Ga Mashie. As I walked through the communities during the field work, most of the buildings looked old and had several cracks with others supporting their roofs with stones (which is an indication of leaking roof or parts of the roof threatening to come off). However, with Madina being a recent neighborhood compared with Ga Mashie, these conditions were rare.

Closely linked with housing type are toilet facilities. The various types that are used across the nation include water closets, pit latrines/KVIPs, public toilets, bucket system, and others although not all are accepted forms of faecal matter disposal. The use or access to water closet is low in Ga Mashie compared with Madina. More than 50% of respondents in Madina reported having access to a water closet while just about 20% used same in Ga Mashie. With limited access to modern toilet facilities, in Ga Mashie, the use of public toilet remains very dominant as 76.7% reported using this as a means of convenience. The high use of public toilet in Ga Mashie is again linked to crowding in compound houses as some studies have

shown that, most toilet facilities were converted to extra rooms to accommodate increasing household sizes. In some situations, the mismanagement of sanitation facilities within homes with relatively large numbers of occupants leads to their eventual shutdown and reuse as additional bedrooms (Dapaah, 2011). A study by Mahama et al., (2011) confirms the high use of public toilets with 90% of households reporting the use of public toilets. The study further showed that, poor management of the toilet facilities lead to a waiting period of between 3 to 4 minutes during peak times (early morning and evening).

The occupational background of respondents in both communities mimics patterns at the national and regional level. It is estimated that, in Ghana, 86.1% of the population work in the private informal sector while in Accra over 70% of people also work in the private informal sector (GSS, 2013). Most of Ghana's urban areas are characterized by a high level of informality and it is therefore not surprising that majority of respondents in both communities reported working in the informal sector (see Table 1). In Ga Mashie, 45% of respondents reported working in the informal sector while in Madina this was 23.8%. The high level of informality in Ga Mashie relative to Madina is a reflection of the low levels of education in Ga Mashie. These figures which show a relatively lower rate as compared with the aggregate figures for the entire Greater Accra region could also be because some of the respondents who reported working either full time or part time for wages could also be engaged in the informal sector, although this was not clearly shown (see Table 1).

## **1.5 Research questions**

This comparative research aims to elicit how two different poor urban communities in metropolitan Accra; one indigenous and one migrant, cope with inadequate supply given limitations of the current water system. The overarching research question is: how are the everyday dimensions of water access in Ga Mashie and Madina influenced by the underlying socio-cultural characteristics and infrastructural differences in the communities. As well, other specific research questions explored include:

- What are the main differences in water accessibility between Ga Mashie and Madina?
- How do the different modes of access affect community vulnerability, particularly during times of uneven supply or scarcity of water?
- How might the different community characteristics (socio-demographic, etc.) influence the situation, community perceptions about water, as well as potential governance responses?

### 1.5.1 Research hypothesis

Based on the background information provided, the main hypothesis guiding the study is;

#### Hypothesis 1

$H_1$  = Ga Mashie with its high ethnic homogeneity has better water access than Madina which is ethnically heterogeneous

$H_0$  = Ga Mashie with its high ethnic homogeneity has same water access as Madina which is ethnically heterogeneous

## 1.6 Theoretical background

### 1.6.1 Introduction

This literature review captures the key theoretical and empirical issues guiding this thesis. The review is organized into sub-themes that cover major topical areas addressed by the study. These include the field of governance related to management of resources (and in this case water). I draw on the entitlement theory, trust and homogeneity (as elements of social capital) to explain the determinants of water access. Finally I conclude with the concept of vulnerability and resilience as an end point of a people/community's adaptation to water access or in-access.

### 1.6.2 Water governance

Generally, the concept of governance has been defined by various scholars to reflect the diverse management issues surrounding the utilization of a particular resource. The concept of water governance relates to all the institutional (both formal and informal) arrangements governing water resources has become an important issue of global discourse. This is because while water remains an important parameter in sustainable development (Araral and Yu, 2012), the nature and role of the state (both at the local and globalized interconnected world) in relation to water provisioning is changing (Franks and Cleaver, 2007). For instance, at the local level it has emerged that citizens are making contributions to help their communities in addition to the services the state provides by looking to a network of alliances and partnerships for the services they expect. According to Franks and Cleaver (2007) "governance provides a way of conceptualizing this emerging network of relationships between different sectors and interests in society, enabling us to analyze how governments, the public and private sectors, civil society,

citizen groups and individual citizens forge networks and linkages to provide new ways for society to order itself and manage its affairs” (p.291).

In this work, I adopt the meaning of water governance as defined by Bakker (2003 a) as: the “range of political, organizational and administrative processes through which communities articulate their interests, their inputs are absorbed, decisions are made and implemented, and decision makers are held accountable in the development and management of water resources and delivery of water services” (p.4). Beyond this definition of water governance, other authors have asserted that governance is often not directly linked to water but subsumed in other issues. McGranahan and Satterthwaite (2006) suggest that, many of the governance issues surrounding inadequate access to water and sanitation services are not sectoral issues, but relate to land tenure, housing security, the regulation of rental markets, environmental rights and responsibilities, the political basis for community organization and a number of other concerns that are well beyond the bounds of the water and sanitation sector *per se*.

Available evidence suggests that, the so-called “better models” advocated have tended to follow political trends that have little to do with experience in the water sector. For instance, Harris et al (2013) discuss three hegemonic concepts; crisis and scarcity, marketization and privatization and participation, which for decades have become a gradually embedded ideological discourse in global water governance. Yet, different parts of the world face very different water conditions and governance challenges. The problem is that often, “hegemonic concepts are presented by their proponents so frequently and authoritatively that they exude an aura of unassailable objectivity in the quest for more effective water policies and management practices (*ibid*, p.17). Gramsci suggests that these notions exude ‘common sense’, which forms the ‘ideology or conception by which people validate their day-to-day, functional position in any given political, economic, and cultural system’ (Perkins, 2011, p 559 cited in Snowden 2013). Following from these, governments’ decisions to create water markets or privatize water delivery services are often justified as a response to ideas of crisis or scarcity while market approaches are often accelerated by calls for devolution and for more participatory approaches.

In Accra, Songsore (2008) reports that while most wealthy households have in-house pipes and are connected to overhead storage containers<sup>5</sup>, the most deprived households rely mostly on informal water vendors, communal standpipes, and other less efficient water-supply sources. Yet, informal water vending is often taken as a symptom of a failure in formal piped systems, which rather provides water to only a

---

<sup>5</sup> These are very large water storage tanks (average 9000 litres) often called ‘polytanks’ in Ghana and they are often highly priced and can be afforded by the rich in society.

minority of urban dwellers in many parts of the world (McGranahan and Satterthwaite, 2006). In effect, the governance reforms in the water sector has been largely exclusionary to the neglect of poor and low income communities and therefore, there is currently very little understanding of the efficiency of the water systems used by poor neighborhoods and how they are able to meet their water needs. Thus, this is a major crux of my investigation, particularly in chapter 2. It is therefore important that research seeks to identify the kind of governance structures that exist at the communal level, particularly in relatively impoverished settlements and in this case, my two study communities; Ga Mashie and Madina.

In the next section I look into entitlement theory, trust and homogeneity with specific regard to how other scholars have utilized these theories and how they relate to my study.

### 1.6.3 Entitlement theory, trust and homogeneity

#### a. Entitlement theory

Sen's entitlement analysis has been a pioneering work for a number of studies. Although it focused on food insecurity, it suggests that, unequal resource delivery stems from the social structures that lie beneath resource distribution. By drawing attention to how particular individuals and groups of people gain access to and control over food, Sen provides explanations of how people can starve even if there is an abundance of food as a result of a collapse in their means of command over food (Leach et al., 1999, p. 232). Scholars from a range of sectors have drawn on Sen's entitlement approach to explain how individuals and groups gain access to and control over resources including social and environmental resources in an attempt to sustain their livelihoods. While it is an approach of some generality, it makes an attempt to include all possible influences that can in principle affect access, for example illegal transfers. In this study, I draw on the entitlement approach to explain how poor urban people access water. This includes a range of people's endowments such as income and network of relations, (family, communal etc.) that an individual can trade or use to access water at either the communal or household level.

The entitlement approach focuses on the ability of people to command resources through the legal means available to them in the society, including the use of production possibilities, trade opportunities, entitlements, vis-à-vis the state, and other methods of acquiring resources. According to Sen a person's "entitlement set" may range from a "full range of goods and services that he or she can acquire by converting his or her "endowments" (assets and resources, including labour power) through "exchange entitlement mappings". For instance, Sen (1982) makes the distinction that, lack of access is the characteristic of some people not having enough food to eat and not the characteristic of there not being

enough food to eat. The entitlement approach concentrates on those means of commanding resources that are legitimized by the legal system in operation in that society.

Relating this to water access, at the national level, Ghana has abundant water resources that should allow all its citizens to have access to water. Ainuson estimates total renewable water resource in Ghana to be 53.2 km<sup>3</sup>/yr out of which 30.3 km<sup>3</sup>/yr is produced internally. For instance, in 2000, less than 0.982 km<sup>3</sup> of water representing 3.27 percent of internally produced water was withdrawn for use. These suggest that there are abundant water resources available in the country to satisfy urban water needs. However, the evidence shows that, pipe water supply is erratic and unavailable in many places in Ghana and few people have access (Ainuson, 2010). What Sen's entitlement theory tells us is that, it is not the quantity of water available that will determine access, but questions of entitlements, or the assets a person owns that could be traded for or converted into water is what is important. In the case of my study communities, it stresses the need to examine each inadequate water access differently since each community presents different entitlement mappings. Again, this also suggests the need to look beyond an entire community to look at specific demographic groups in the populations or specific households and how they meet their water needs based on their ownership and other forms of entitlement relations within a society.

Wutich and Ragsdale (2008), draw on the entitlement theory (Sen, 1981) to understand the notion of "sufficient access to water". Relating the entitlement theory to water, Wutich and Ragsdale (2008), argue that individuals have a "commodity bundle" of ownership rights and endowments which permit them to acquire "sufficient access to resources". The authors identified what the endowments in the community include and explain how people use an array of economic and social assets to acquire access to water. For instance, they found out that, in Bolivia, Villa Israel, households with greater economic assets and more access to water vendors were significantly less vulnerable to water insecurity than households with fewer assets and less access to water vendors (Wutich, 2007). This perspective of household and community entitlement to water taken by Wutich (2007) could be very interesting to compare with my study communities since each community has different levels of entitlements which can affect their access to water.

#### b. Trust and homogeneity as elements of social capital

The concept of social capital is very diverse and has been used widely in a number of applications. Social capital acts as an umbrella term that covers a range of processes by which social relations are formed and form other institutions or relationships. In the context of resource use and management, social capital can be defined as "those features of social life—networks, norms, and trust—that facilitate citizen association and enable participants to act together more effectively to pursue shared objectives" (Putman 1995, pp.

664-665). Fukuyama underlines the link between social capital and trust. According to him “Social capital is a capability that arises from the prevalence of trust in a society or in certain parts of it (Fukuyama, 1995: p.26).

In relation to water and social capital, a lot of studies have been done particularly on access to irrigation and how social capital influences it. In this case, social homogeneity refers to people from the same village, ethnic group, kinship, caste, or religion, while economic homogeneity refers mainly to members having similar landholdings or income. It has been argued that homogeneity of a group can have important influence on the outcome of collective action by increasing the number of social ties and norms that groups can draw upon in building cooperation (Subramanian et al., 1997). For instance, qualitative studies by Lowdermilk et al., (1978) support the argument that the homogeneity of irrigators with respect to kinship is likely to promote collective action. On the other hand in Senegal, Fresson suggests that in some cases heterogeneity of irrigators with respect to caste contributes to disputes over functioning of irrigation associations (Fresson (1979) cited in Kähkönen, 1999). Lam (1998) provides some evidence on the negative impact of ethnic and cultural heterogeneity on communal action for irrigation. In this study, Nepalese farmers of the same ethnic background (particularly with high level of solidarity) are often unwilling to work with farmers of different ethnic backgrounds. Though with a very small sample size, Tang (1992) cited in Kähkönen, (1999) also shows that in some situations social and cultural groups can inhibit coordination in collective action by increasing the cost of organizing collective action.

Thus in this context, social capital is considered both as a capital stock and a mobilizing force for collective action that includes associational relations within a community that bond, bridge, or link family, friends, community members, and even those beyond the reach of individual communities (Woolcock (2001) cited in Mendis-Millard and Reed, 2007, p.542). In the case of my research, I focus mainly on the trust and homogeneity components of social capital to explain how respondents relate among themselves and with public officials who manage, control and advocate for community water needs. In the next section I focus on what is meant by vulnerability and resilience as is relevant to my two case studies.

#### 1.6.4 Vulnerability and resilience in water related stresses

There is no consensus on the meaning of vulnerability. As a concept, it has been used in diverse research fields (Adger, 2006; Smit and Wandel, 2006). Some of these include fields such as societal subsystem,

ecological, natural, or biophysical subsystem, or to the coupled socio-ecological system (Anderies, et al., 2004). Vulnerability can be defined as “the diminished capacity of an individual or group to anticipate, cope with, resist and recover from the impact of a natural or man-made hazard” (www.ifrc.org). It may be characterized as a function of three components: adaptive capacity, sensitivity, and exposure (Schneider et al., 2007 in Shah et al., 2013). The term is thus relative, dynamic, location and context specific. The degree of vulnerability varies widely between and within countries, cities, localities and households. In essence, vulnerability stems from location and social disadvantage (lack of power), and is often exhibited as income poverty (Cutter, 1996). Also vulnerability can rise when people are isolated, insecure and defenceless in the face of risk, shock or stress (www.ifrc.org).

The concept of resilience on the other hand evolved from the field of ecology and is also applicable in the realm of social systems and socio-ecological systems. Adger (2000) defines social resilience as “the ability of groups or communities to cope with external stresses and disturbances as a result of social, political, and environmental change. Langridge et al., (2006) suggest that, resilience is a vital attribute that characterizes a system’s capacity to cope with stress. Langridge et al., (2006) associated enhanced resilience with an individual or community’s entitlements. Milman and Short (2008) states that maintaining (or increasing) the percent of the population with access to water requires that all aspects of the water system have the ability to absorb external stresses and adapt to changing circumstances.

In most developing countries, people excluded from accessing formal services are households or individuals located in areas of the city that are characterized by poor or absent planning, high population density, poor quality housing, lack of or ambiguous tenure and low access to basic urban services (Evans, 2007). Poor urban populations are therefore vulnerable to exclusion from accessing potable water services for a number of reasons. In most instances, physical location, lack of voice, and day-to-day reality of many poor urban people form their greatest vulnerability in accessing services which are currently, often captured by an urban elite. According to Evans (2007), one of the root causes of exclusion of the poor from enjoying formal access to water supply has been the long-standing inability of utility and city managers and their advisers to plan and implement water systems which respond to the reality of the lives of the urban poor. Population growth also enhances people’s vulnerability.

Moreover, the vulnerability of the poor to water access can also stem from the legal barriers to access water services. These could be in the form of lack of tenure, and failure or inability to meet building regulation requirements (WSA HLF- 2013). Also, the poor are vulnerable because in most instances, they are priced out of accessing formal water services. This comes about as a result of high and unclear piped

water connection fees and disproportionately bureaucratic processes for gaining formal piped water connection (Evans, 2007). Often, city authorities used these constraints as a justification for inability to provide water services to poor areas. Although it is important to identify these proximate causes of vulnerability of the poor to urban water supply, in reality, their vulnerability may arise largely because of structural constraints in the city as a whole which may be a product of underlying political economy issues in the city's governance. In most instances, poor urban communities are not the priority for decision makers as existing policies mostly favour influential populations. These are further reinforced by a lack of awareness or unwillingness to implement approaches that work due to dominant hegemonic discourses which control water governance reforms at both global and national levels.

The concepts of vulnerability and resilience are used extensively in chapter 3. Based on the relative determinants of water access in both communities which are influenced by existing entitlements, I argue which community or group of individuals might be vulnerable or resilient. In the following sections I give a detailed methodological approach to this study, a descriptive analysis of the sites and a justification for the selection of these two communities as my study sites.

## **1.7 Methodology**

### 1.7.1 Overview

The research was conducted in several phases. Literature reviews were conducted throughout the 2012-2013 academic year to provide the background theories and identify gaps in water delivery and access particularly in poor neighborhoods. In summer of 2013, I conducted field work in Accra, Ghana. Primary data was collected from my two main study communities with the use of a mix-method approach (Creswell, 2009) involving a household survey, interviews and focus group meetings.

### 1.7.2 Sampling and field work procedures

The first approach involved the use of a household survey to sample 200 households divided proportionally between the two sampled communities; Madina and Ga Mashie. The breakdown of the 200 respondents with 120 for Ga Mashie and 80 for Madina was based on simple proportional representation of the population size. Based on the 2010 Population and Housing Census (PHC) in Ghana, Ga Mashie had a relatively larger population than Madina (GSS, 2013). The 200 respondents selected for the survey was arrived at due to a number of reasons. The first was to expand on earlier studies in different

communities both in Accra but under similar contexts by the broader research group (Harris et al. 2012, Morinvile 2012, Peloso 2014). Secondly for constraints of time and resources, 200 was an ideal sample size to form the basis of any statistical or quantitative analysis.

I used a stratified sampling technique to select my respondents (Twumasi, 2001). Within each community, a transect walk was undertaken to familiarize myself with the extent and sub-localities existing in them. After the transect walk, I divided each community into clusters to enable all sub-localities in the communities to be fairly represented. I used a GPS to record the location of each cluster and this was inputted in the map of the study area (See Figures 1.1 and 1.3). During the transect walk, field notes were compiled on the general nature of the community as well as any information of interest. The transect walks also involved informal interviews randomly with community members which guided the clustering and other observed patterns.

With the support of five research assistants, the survey was undertaken from one cluster to the other until all clusters in the community had been covered. Within each cluster, we focused on households as the unit of analysis. So when one assistant gets a respondent in a house, we moved to about the next five houses (although it was sometimes hard to get the right count because of how the houses are located or situated) until each of the assistants found a respondent. I conveniently sampled more female-headed households than male headed households in both communities because of the fact that women serve as the primary managers of water in my sampled communities. However, a considerable number of young people (at least 18 years) as respondents were also sampled since most of the young people fend for themselves as well.

The second sampling approach involved selecting respondents for in-depth interviews. I used a purposive sampling approach to identify additional informants for the purpose of undertaking the in-depth interviews. Silverman (2010) notes that purposive sampling “enables researchers to select a case because it exemplifies features that fascinates us” (p.141). Selection of informants was based on their social/leadership role in the community, participation in water management committees and any existing informal networks on water management if any. In depth interviews were conducted with two community leaders in both communities who were drawn from traditional and government authorities.

The third level of sampling procedure undertaken was the focus group discussion. In each community two focus groups were undertaken; male and female only groups. Most of the participants selected were outside those used for the survey though in some instances this was not possible. With the help of community facilitators; some community members who by virtue of their length of stay, involvement in

community interventions and knowledge on water issues were approached and upon acceptance used for the focus group meetings.

### 1.7.3 Research instruments

#### a. Household surveys

Across both communities, a total of 200 questionnaires were administered in representative households. In Ga Mashie, one hundred and twenty (120) respondents were sampled while in Madina eighty (80) respondents were sampled. A structured questionnaire with both closed and open-ended questions was used to illicit information from informants for the survey in the form of face to face interviews (See Appendix 1 for questionnaire used for the survey). The use of questionnaires in research provides a direct way of eliciting information from informants by asking questions which the answers are then used for analysis (Wisker, 2008, p. 187). The five research assistants and I formed the team for the survey. The questionnaires were administered between June and July of 2013. The questionnaire administration took between 45minutes to 1hour to complete.

#### b. Focus group meetings

Two Focus Group meetings (FGM) were undertaken in each community. The two included adult men only and adult women only. The age of the participants ranged from 18 years to 57 years in both communities. In each FGM the number of participants also ranged from 5 to 9. In Ga Mashie, both discussions took place in the conference room of the Ga Mashie Development Authority (GAMADA) in the same day at different times. On the other hand, in Madina, the discussion took place in an open place at different dates. It was difficult organizing members in Madina for the FGM. Participants in the FGM were sampled from respondents who took part in the general community survey though in some instances some of the participants fell outside this group. A discussion protocol generated from the survey was used for the discussion. The discussion was moderated with the support of a research assistant. A voice recorder was used to record all the discussions with the explicit permission of respondents. The recordings were later transcribed for analysis.



Image 1.1 Male only focus group meeting in Ga Mashie (Source: Photo taken by author, Fieldwork, 2013)

#### c. In-depth interviews

In each community, in-depth interviews were held with local community leaders. In Madina, interviews were held with two assemblymen who represented different electoral areas. In Ga Mashie, interviews were held with one assembly man and the director of GAMADA (a local development board). Consent was sought from interviewees and recordings of the interviews were done in all cases.

#### 1.7.4 Challenges and limitations

In terms of challenges, specifically in Ga Mashie most people the team approached often would initially decline to answer the questionnaire at the mere hearing of the main subject of our research “water” because they felt they had a form of access even if it was not reliable. But being a Ghanaian and being able to speak two of the widely spoken languages in these two communities, “Ga” and “Twi” we were able to explain what the research was about to them and often after that they accepted to answer our questionnaire. I have also participated in earlier research efforts on similar questions, as a Research Assistant helping to conduct similar interviews on related water access and governance questions in other communities of Accra with other members of the broader UBC EDGES research team which helped me to explain and relate better with my respondents on the research topic.

### 1.7.5 Validity and reliability of data

Validity can be referred to as the accuracy or truthfulness of data (Creswell, 2009; Silverman 2010) while reliability refers to the consistency of data and results (Lincoln & Guba, 1985; cited in Meirriam, 1985). As such, validity and reliability of data affects the truthfulness of research findings. Questions about validity relates to the instruments used for data collection, the analytical procedures and whether data was acquired in a valid manner. One of the ways of minimizing errors is the use of multiple methods and data sets through the process of triangulation (Silverman, 2010). A combination of diverse data sources from household interviews, focus group meetings and in-depth interviews provided the opportunity to verify information from diverse sources. Moreover, the study combined qualitative and participatory social survey methods with quantitative survey results which enabled the study to investigate the problem with multiple perspectives. The use of survey questionnaire to compliment group and personal interviews ensured the consistency of data.

Given that I have identified and explained the problem and the concepts being used in analysing the results from my case studies, I move on to Chapter 2 which looks at the everyday lived experiences of getting access to water in these two communities and the key differences that are identified between them are also set out. I move on to make an argument on resilience of communities (based on the fact that this research merits a resilience analysis although I did not undertake a resilience assessment in these 2 communities) in chapter 3. I end this thesis in chapter 4 by proposing some key policy amendments in terms of water access based on bottom-up approaches as derived from my research. Chapter 4 also doubles as the concluding chapter of this thesis.

## **CHAPTER 2: DAILY NEGOTIATIONS FOR WATER: A COMPARATIVE ANALYSIS OF AN INDIGENOUS AND A MIGRANT LOW INCOME COMMUNITY IN ACCRA, GHANA**

### **2.1 Introduction**

*Accra is passing through a debilitating water crisis. The streets in the densely populated areas of the city show a constant stream of water-searching residents, most of them women and children* (<http://www.dailyguideghana.com>. February 22, 2014).

The quote above from a newspaper editorial on recent water supply crisis in Accra portrays a picture of the intermittent water supply from the main utility service provider GWCL and the accompanying daily struggles which residents have to go through to access water. While the search for water is a general practice in times of water shortage, there are marked differences as well as similarities in the sources of water available to different communities. It is therefore very useful to look at specific cases to make theoretical propositions or to guide policies. This chapter attempts to provide a discussion of differences between the two study communities.

Specifically, in this chapter, I seek to compare how citizens of both study communities (Ga Mashie and Madina) access their everyday water needs. I connect elements of the analysis to the socio-demographic features (see Section 1.4 in Chapter 1 for details) and aspects of infrastructure of both communities (e.g. indigenous vs. migrant). Features of the two study communities, Ga Mashie (an indigenous community) and Madina (a migrant community) including access to social services, socio-economic status, are detailed in Chapter 1.

In section one, I compare water access and supply patterns between the two communities. Specifically, I examine how different water supply sources create burdens and also ease of access on each of the communities in terms of the time used in fetching water, the prices of water, and so forth. In this section, I also, compare the dominant role of vendors in the water supply process in both communities.

With knowledge of the different water accessibility options in both communities in section one, in section two I focus on how water was ranked together with other community challenges among citizens, showing that water is clearly a priority in both communities. I then move on to compare this with narratives from select officials that I spoke with in both communities on how they characterize and or prioritise water in relation to other problems in the community. Here, I am interested in the narratives around water access and supply in both communities including what can be learned from them and how they differ.

In particular, the analysis demonstrates that Madina is not able to rely on the GWCL's supply unlike Ga mashie since there is no piped infrastructure in the community. Yet, dependence on vendors daily is the main source of water supply in both communities although high cost of water remains a concern in Madina while conflicts at water collection points and distance to access water is an issue in Ga Mashie. In both communities, the shared/unshared perception of local officials on whether water access is a key community problem or not affects the intervention the community gets to mitigate the problem.

## **2.2 Examining water access and supply patterns in Ga mashie and Madina**

In this section, I attempt to discuss the diverse sources of water between Madina and Ga Mashie. First, I discuss all the sources of water supply available and mentioned by respondents in both communities. Secondly, within the available sources of water mentioned by respondents, I proceed to discuss the primary water supply as mentioned by respondents. Primary water supply in this case represents the major source of water used at the household level for household chores (as reported by survey respondents).

### **2.2.1 General differences in sources of water supply between Ga Mashie and Madina**

In most of Accra's low income communities, access to water is met through diverse sources. From the literature and confirmed by an earlier survey by Harris et al., (2012), the available sources of water supply to most households in Accra include in-house pipe connection, in-yard pipe connection, private water tanks, commercial vendor water tank, commercial standpipe, private borehole, commercial borehole and bottled or sachet water. In the work of Harris et al., (2012), 16% of the households surveyed had in-yard connection, 4% had in-house connection, 5% from private water tanks, and as much as 75% from various commercial vendor sources. Using these as a guide, respondents in the two communities surveyed for this study were asked to indicate all their available sources of water supply. Table 2.1 shows differences and similarities in water access between Ga Mashie and Madina. It is important to note that households use multiple sources of water and thus the total is more than 100%.

First, figure 2.1 clearly shows that water vending is the most common source of water in both communities. Yet, there are differences in the way water vending operates in both communities. While the dominant form of water vending in Madina is commercial vendor water tank (71.3%), in Ga Mashie the dominant water vending is delivered through commercial stand-pipe (75.8%). The high reported use of commercial vendor water tank in Madina can be explained by the fact that the community as a whole is not connected to the city's supply system. As a result, commercial water vending (stored in tanks)

remains the obvious alternative for most households who could not afford a private water tank or borehole (see Section 2.3.2). Commercial vending water tank includes water that is stored in water tanks often known as "polytanks" or in other storage containers and managed by an individual often sold to the public for profit while commercial vendor standpipe or tap includes water that is sold by an individual or household which is connected to the `GWCL . This water source is also often profit-oriented.

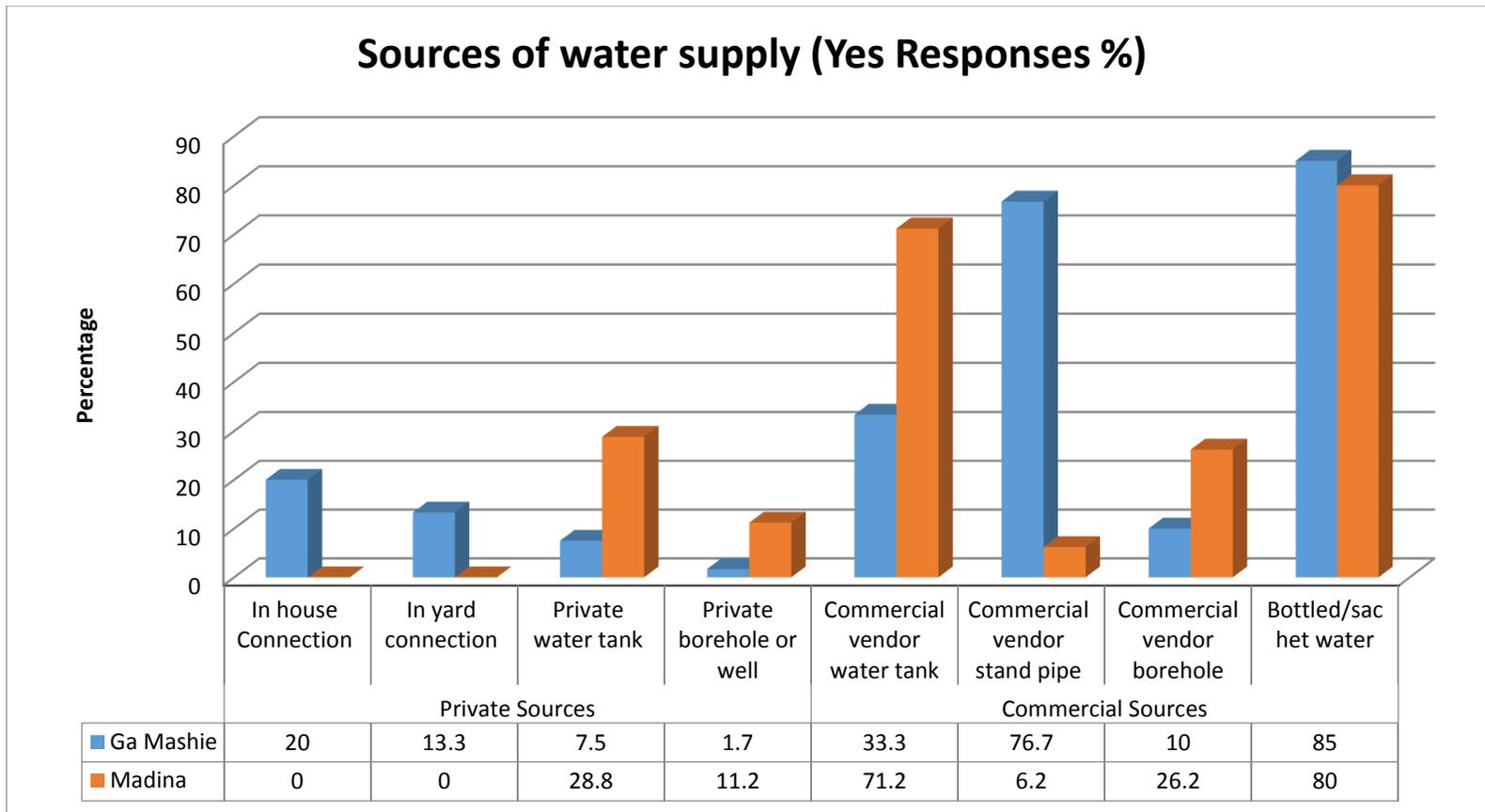


Figure 2.1 Differences in water access between Ga Mashie and Madina

(Source: Data from Fieldwork, 2013)

Figure 2.1 shows multiple responses from respondents when asked to show all the sources of water they use in Ga Mashie and Madina.

A key difference in water accessibility between the two communities is the use of in-house connection and in-yard connection as can be seen from Figure 2.1. In Ga Mashie, 20% and 13.3% reported the use of in-house and in-yard connections respectively, while in Madina none of the respondents reported using either in-house or in-yard piped water. This suggests more direct access to piped water in Ga Mashie compared to Madina. The low reported use of in-house and in yard connection (which are often taken to represent the ideal or preferred sources since this means a direct connection to the city's piped infrastructure) shows that the water accessibility in both communities are poor which are typical of most low income communities.

Another important difference in water accessibility between Madina and Ga Mashie is the use of boreholes; whether private or commercial. Although access to a borehole is low in both communities, more people in Madina reported using borehole compared with Ga Mashie (Table 2.1). Yet in Madina, as in other places in the city of Accra, borehole drilling is often affected by the lack of legal titles to land (Ainuson, 2009) and the high cost of initial investment or upfront cost involved in borehole construction. The relatively low use of boreholes in Ga Mashie could be explained by a host of factors. First, the close proximity to the sea and possible saltwater intrusion into the underground water table does not make it attractive to invest in boreholes. During the Focus Group Meeting (FGM), it was revealed that the few boreholes existing are salty which limits their use. In addition, respondents mentioned that boreholes are less common in Ga Mashie due to lack of physical space to provide such infrastructure as a result of crowding in the community.

Reported use of sachet water was as high as 80% and 85% in both Madina and Ga Mashie respectively. It is however important to point out that the high reported use of sachet<sup>6</sup> or bottled water in both communities is largely restricted to use as drinking water source and not likely as the 'primary' source of water, due to high costs and relatively small size of the sachet packets. In Accra, sachet water is the second most common drinking water source (forming the main water source for as much as 26% of residents) apart from piped borne water (GSS, 2012). Most household members often use sachet water as the sole drinking source when on the streets and also at home. Most people also use sachets to meet other basic needs when there is shortage of their commonly used water source. Despite the high dependence on sachet water in both communities, the prices of sachet water have seen considerable increases and this could put considerable burdens on poor households (Morinville, 2012) especially when supply from a

---

<sup>6</sup> Sachet water is a locally produced drinking water packaged in polypropylene bag of 500 ml. Sachets are available for immediate consumption or in bulk packages for home-consumption throughout the capital and other major cities, offering an alternative to limited supply or to untreated water. See Morinville (2012) and Stoler et al., (2012) for a detailed discussion on sachet water in Ghana.

regular source is interrupted which is a common occurrence in Accra. From the beginning of 2007, the price of sachet water was Gh 0.03 cedis but this shot up to Gh 0.05 cedis due to Ghana's currency redenomination. In March 2011, the price shot up to 10 pesewas, almost doubling the cost (Stoler et al., 2012; Ghana News Agency 2011 cited in Morinville, 2012) Currently, the price is 20 pesewas with producers citing high cost of raw materials due to depreciation of the cedi in recent months (Erzuah, 2014). According to Stoler et al., (2013) sachet consumers tend to be younger, of poorer overall health, and of lower socioeconomic status. Further Stoler et al., (2013) suggested that sachets may still be a discretionary, but increasingly attractive, choice to younger, poorer urban residents. In the focus groups, these sentiments were echoed, with some mentioning that especially young female adults are more likely to value the convenience of the sachet water, preferring the higher costs to walking long distances or carrying open buckets. As well, as analysed by Morinville (2012), sachet water has a sense of purity and cleanness, contributing to its attractiveness (perhaps especially for the youth).

Having discussed all the sources of water supply available to respondent in both communities, the next section of the study focuses on primary water use. Primary water supply in this case represents the major/common source of water for household use as reported by the respondents.

### 2.2.2 Primary sources of water supply in Ga Mashie and Madina

Primary source of water in this study represent a water source where respondents derive the bulk or main source of water for their household activities which may include cooking, bathing, washing etc. Though the patterns are not too different from what emerged in Figure 2.1, there were some interesting findings. The key differences in the primary water source in both communities is that, while majority of respondents in Ga Mashie derive their primary water from commercial vendor stand pipe (54%), residents in Madina derive it from commercial vendor water tank (55%) (see Figure 2.2). An important conclusion that could be drawn from this is that, altogether, citizens in both Ga Mashie and Madina derived their primary water sources from commercial vendor services. This mirrors responses to an earlier survey in other communities in Accra that indicated overall reliance on vendors (for primary water) at about 47% (Harris et al., 2012).

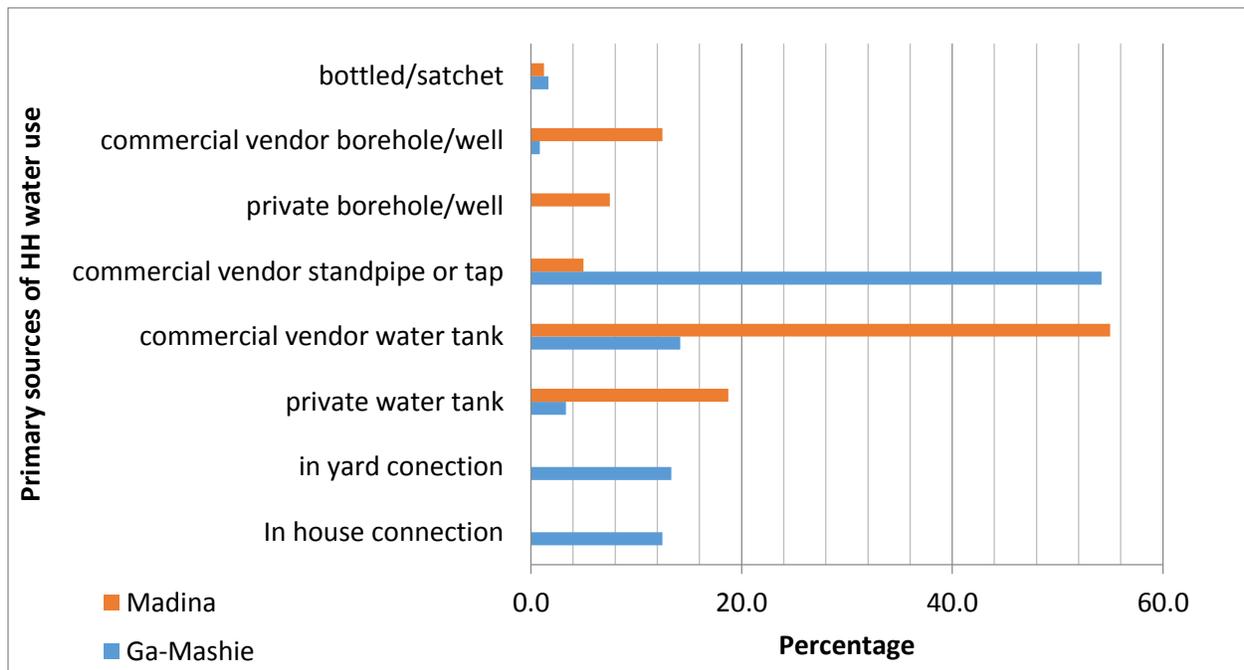


Figure 2.2 Primary sources of water in Ga Mashie and Madina

Figure 2.2 shows a clear difference in terms of commercial tank or tap, while showing direct connection to the system, again as a key feature in Ga mashie but not in Madina (Source: Fieldwork, 2013). Apart from the high dependence on vendors in both communities, other primary sources of water usage were largely different except for the use of sachet/bottled water (Figure 2.2). Less than 2% of respondents in both communities reported the use of sachet/bottled water as primary water source. The use of sachet water in this case may come as a response to supplement common household water use in times of shortage.

While none of the respondents in Madina use either in-house or in-yard pipe connections as a primary water source, in Ga Mashie 12.5% and 13.3% reported the use of in-house and in yard pipe connection respectively as primary water sources. This is due to the fact that Ga Mashie is physically connected to the city's water infrastructure networks while Madina is not. On the other hand, in Ga Mashie none of the respondents reported the use of private boreholes as a primary source of water but in Madina, 7.5% of respondents did.

By examining all sources of water (including primary water) available to respondents in both communities, a clear pattern that emerges is the high dependence on commercial water vendors. Even in Ga Mashie which is connected to piped water, more than two thirds of respondents depend on commercial water vendors. Hence, important questions to ask are; what role do vendors play in water access in both communities and how has water vendors become dominant in Ga Mashie? Below, I look at the role of

commercial water vendors in the water delivery of both communities and how this affect citizens' water entitlements and the relationship between vending and community vulnerability.

### 2.2.3 The role of water vendors in water access

As has been shown in the earlier discussions, water vendors remain the primary points of water supply to residents in both Madina and Ga Mashie and by extension for most parts of Accra. Generally, vendors refer to private individuals who sell water to consumers at various levels within the supply system. They can be called 'Informal' vendors (Peloso, 2014), private water operators (Adank et al., 2011), community-based water providers (Osumanu and Abdul-Rahim, 2008), and artisanal (Bakker, 2003b). However, informal vending remains the most commonly used term.

Figure 2.3 captures the frequency with which respondents in my study communities depend on vendors. While 60.8% of respondents in Ga Mashie bought water daily from vendors, in Madina 58.8% of respondents also bought water daily from vendors. In addition, over 90% of respondents in both communities (who either owned private water tanks or depended on vendors) reported that almost on a monthly basis, there were periods where they experienced interruptions in water supply. As a city struggling to provide water to an exploding population and coupled with an ageing water infrastructure managed by the Ghana Water Company Limited (GWCL), water interruptions are common occurrences in the city of Accra (Ainuson, 2009). This normally affects the supply lines of vendors throughout the city, especially in places such as Ga Mashie since their main source of water supply is directly through the GWCL. Thus in Ga Mashie, the bulk of commercial water vendors are referred to as primary vendors since they derive their water directly from GWCL. In the case of Madina, vendors derive their water via water tanker services (who access water supply from various parts of the city) and therefore most vendors are secondary vendors. In this case, interruptions in water supply may be felt less in Madina since they do not depend directly on the GWCL for their water needs but rather through multiple water tanker suppliers who may have access to water from different parts of the city within a given period of time. Due to the rationing of water in Accra, different part of the city may enjoy water access at different times and most tanker operators with their extensive networks have information about which part of the city might enjoy water at any point in time. In Madina, vendors have a way of responding to occasional shortages in water supply from the city's trunk water systems. In most instances, they make arrangements with multiple water tanker services that may enjoy supply from the city's supply systems at different locations. In this case, shortages of water supply are minimized and interruptions less felt.

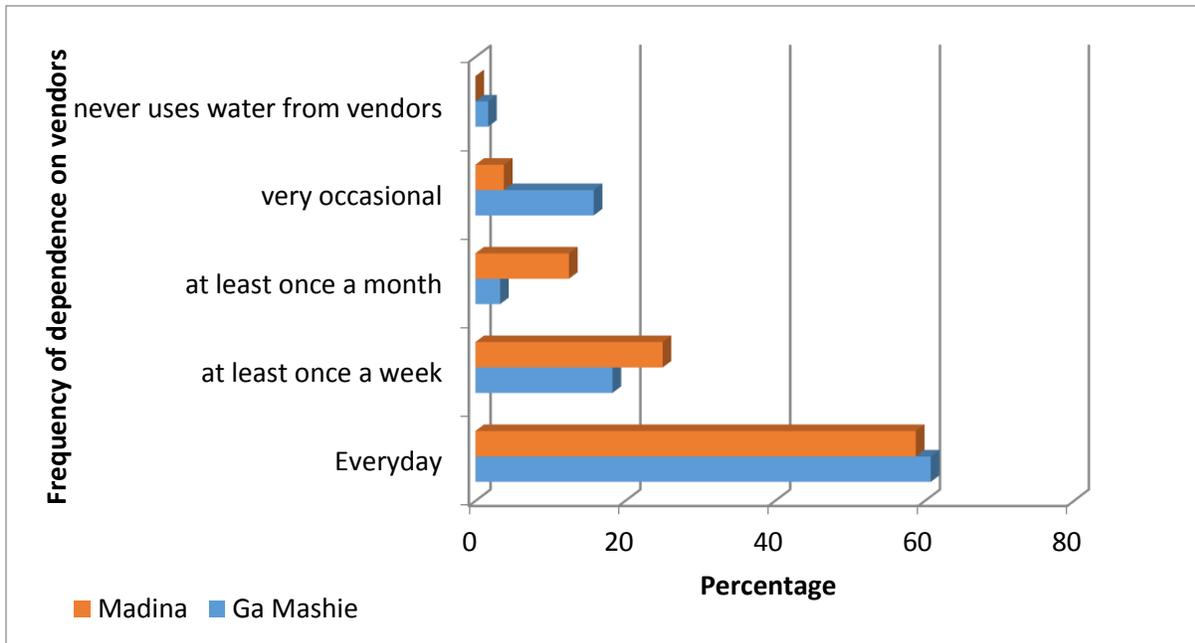


Figure 2.3 Frequency of dependence on vendors

(Source: Fieldwork, 2013)

The high dependence on vendors in this study is consistent with other studies which show that many urban residents rely heavily on water tankers and private vendors (Ghana Integrity Initiative, 2011; Harris et al., 2012). Adank et al., (2011) suggest that it is common in the GAMA to rely on secondary vendors for at least a portion of water needs as reliability of services from the water utility company is lower than it is generally acknowledged. As a result, though unregulated, in Accra, informal water services/vending have become appendages to the formal network and sourcing water through multiple small-scale intermediaries offer residents an immediate alternative to inconsistencies in formal water delivery (Peloso and Morinville, 2014) even in communities with piped water supply such as Ga Mashie. Over time, most citizens have found informal water vendors to be reliable and trustworthy in their dealings.

Although vendors play a key role in the water delivery process in both Madina and Ga Mashie, their services remain largely unregulated and this often affects the price, quality and likely availability of water in these communities. In Ga Mashie, because of interruptions in water supply, most vendors have storage containers for keeping water that may be sold to customers later especially when the taps are off (see Image 2.1). In Ga Mashie, these storage containers are often placed along main streets with poor covering.



Image 2.1 Stored water in jerry cans along streets in Ga Mashie.

(Photo credit: Author)

For instance, the use of water vending as a means of water supply has been linked to a number of poor health outcomes thus, a considerable health risk for consumers (Songsore 2008; Ainuson 2010). In a wider study in Accra by Songsore (2008) among residents with in-house pipes recorded a two week diarrhoea prevalence rate of 6.8 % while that of communal standpipe and vendor were 42% and 13.9% respectively. Again in the same study, community's residents who carried water either by hand or head had a two week prevalence rate for diarrhoea of between 17.7 - 24.7%. In Ga Mashie, water was stored in storage tanks without appropriate covering, left in the open and even along streets (Image 2.1) for sale and for household consumption. These are largely linked to practices of unhygienic water handling and storage in deprived low income areas as it was shown in Ga Mashie. In view of this Songsore (2008) argues that "it is not enough to focus on bringing "water to the tap"; and that what is happening "between the tap and the mouth" is also critical in determining health outcomes"(p.9). In this case, though people in Ga Mashie are captured by national statistics as obtaining water from improved sources, the manner and form in which the water is delivered could compromise the quality of the water (Image 2.1) with considerable health risk especially with commercial standpipe.

Vendors in Madina get their supply largely through mobile water tanker services (Image 2.2) that source the water from different areas of the city which enjoy piped water or directly through GWCL. These are then stored in metal containers or polytanks and carried in vehicles to be supplied to consumers (see Image 2.3).



Image 2.2: Water stored in polytanks to be delivered to a vendor in Madina.

(Photo credit: Author)

From the mobile water tanker services, the water is delivered to retail vendors who store in polytanks (see Image 2.3). It is from this point that community members go to buy water for domestic use as well as for commercial purposes (e.g. food vendors).



Image 2.3 Water stored in a polytank and ready for sale in Madina.

(Photo credit: Author)

Water vending points are widespread across Madina and therefore consumers do not spend much time in getting water. The average time spent in getting water daily in Madina was 10 minutes daily during periods of normal water supply ( see section 3.3 in chapter 3, time spent in getting water).

One question that is of interest is how have vendors become the dominant actor in water provision in Ga Mashie which is actually connected to the city's supply system? The case of Ga Mashie is more surprising because the community is largely connected to the GWCL supply lines and one might have expected adequacy/consistency in supply and less dependence on water vendors. Yet, the data suggest otherwise as dependence on water vendors is equally as high as in Madina which has not received water supply from the GWCL for the greater part of its existence. In Ga Mashie vendors have become the main actors who supply water to citizens. In effect vendors have become the 'defacto' source of water supply compared to the GWCL. The pricing is set by them as and when supply patterns from the GWCL changes as well as when there are changes in fuel prices. The dominance of water vendors in Ga Mashie could be attributed to a number of factors including housing blight, crowding and poverty which I discuss below through the responses from discussions in both focus group meetings and interviews.

To start with, Mr. Tee<sup>7</sup>, the Director of GAMADA throws more light on the dominance of vendors in Ga Mashie instead of household piped connections.

***Interviewer:** is there any reason why people buy water from vendors and do not have them in their homes?*

***Respondent:** they were not paying (i.e. monthly water bills) and the accumulation (indebtedness) was too much so they will (i.e. GWCL) cut you off. So in most compound houses the conflicts on water management is much prevalent so they disconnect and buy outside. So they would prefer having the water bought to have their peace.*

To bring out the meaning in the conversation above with piped water disconnection from households in Ga Mashie suggest that, most households (living in compound houses) previously had a piped water connection. However, population growth in compound houses over time led to increased water utility consumption. As a result, most compound houses were unable to settle accumulated monthly water bill and this led to huge indebtedness. This huge indebtedness had to be shared by households who are mostly an extended family, living and sharing the space in compound houses. Family members could not agree on how the bills had to be shared and increasingly, the bills got piled up without any payments being made. The GWLC is also plagued with inefficient water bill collection system that enabled bills to be

---

<sup>7</sup> Mr. Tee is a pseudo name and does not represent the original name of my respondent.

piled up. According to Ainuson (2009), from 1996 to 2003, the water collection bill of GWCL has been lower than actual water sale (p.91). A report by Sakyi-Addo (2003) during the peak of water privatization debate in 2003 in Ghana quoted that, “half of GWCL’s daily water production of 120 million gallons is unaccounted for, lost through leaks and unpaid bills”. Eventually however, most households who owe water bills get disconnected by the water company. In the words of Mr. Tee, the problem is associated with difficulties in management of water at the household level—referring to compound houses rather than individual nuclear households (see section 1.4 and Table 1.1 on compound houses). Compound houses remain the dominant form of housing in many low income communities in Accra (GSS, 2013) and due to the crowding in most of these compounds management of household utilities (payment of bills) becomes a challenge. As can be seen in the words of Mr. Tee when he was asked why people are not directly connected to the water system from the city, he said;

*“Who controls the water, who invests in the connection to the house is the problem. Just like electricity, the more people consume, the more expensive it becomes so you have problems of sharing among the members...if one household consumes less while the other households consume more, how do you share the cost?”... “So people prefer buying from vendors so they have their peace” (Interview with Mr. Tee, August, 2013).*

Thus the pervasiveness of water vending in Ga Mashie has more to do with convenience and flexibility in the operations of water vendors that appeal to such a low income community. Peloso (2014), writing of the conditions of water access in a similar low income community in Accra suggests that, water vending is an adaptation that accommodates a need for basic amounts of water and entail certain measures of flexibility and self-management that are not found in other water services, including those provided through the formal GWCL network. For instance, the daily dependence on water vendors for household water in Ga Mashie gives the neighborhoods the flexibility to meet their daily needs for water which under formal piped water supply from GWCL might be difficult. In the case of Ga Mashie, dependence on vendors enables households to pay in small increments compared to monthly bills. Thus with informal commercial vending, residents do not need to pay for bulk water which they cannot afford and can conveniently access the water as and when they need it which in most instances is daily by the bucket. On the other hand, though water vending may have proven to be inefficient in terms of undesirable outcomes such as poor health and high cost to the poor (Songsore, 2008), in the light of the above findings, there is the need to re-examine how public water access seems to prioritise extending formal piped water as the only model even for areas without piped water. Improving the inefficiencies in vending could provide a sustainable option for low income communities as governments finds it difficult to extent piped water access to underserved areas in the short to medium term.

In another vein, some respondents also felt water supply inadequacies in the community is compounded by the activities of some vendors who interfere with the water supply system and divert water meant for the community. For instance during the FGM's various wrong motives and perceptions were inputted to the activities of water vendors.

According to a middle aged woman who was one of the participants in Ga Mashie;

*“Even here in James town (Ga Mashie), the water flows at some places and does not flow at other places. There are times when some houses have water and other places do not have water flowing for 2 to 3 weeks. Sometimes, when the taps are flowing in your neighbor's house and it's not flowing at your place, then you should know that, someone might have bought a pump and he or she is using it to pump water into his or her polytank. Such people sell the water when the taps are not flowing. We have been made to understand that, people who use that method should be reported since it will stop the tap from flowing to other people's homes” (Focus Group, Ga Mashie, August 2013).*

Another female, a young woman in her mid-twenties said that;

*“Mostly those in charge of water take “a” bribe from those who use the pump to divert water and sell so they do not take any action when people draw their attention to it”(FGM, Ga Mashie, August, 2013)*

Yet another young woman said;

*There are people who also do illegal connection on the pipelines and sell it so every water they use does not go into the government's accounts. It goes into their own account (Young woman, Focus Group, Ga Mashie, August 2013).*

As these narratives suggest, water vendors may have become powerful actors who could potentially sabotage the water supply system to their benefit. This confirms earlier studies by Monrville (2012) in Accra that suggests that some forms of vending, such as the sachet system, may be undermining the formal piped system in Accra. The PURC (2013) estimates that about 85% of sachet water producers directly access water from the GWCL. They further state that most of these sachet water producers are based in Tema close to the Kpong Treatment Plant where supply is reliable while others can also be found in the Accra East region. However, further research is needed to substantiate these claims (see also Morinville, (in progress), for more on the issue of sachet water production in Accra, Ghana).

## 2.3 Importance of water among other community problems and perception about water access

### 2.3.1 Citizen's ranking of water access relative to other problems

*“If we all look at it now, in this community, water problem is something that worries us a lot. Most often they close the tap and when they close the tap, some of us get stranded so we do not get water to bath. Water is a major thing that bothers us (Young man, Men Focus Group, Ga Mashie, August, 2013)”.*

Understanding of the nature and severity of a problem from the perspective of the people directly affected by it is important for any intervention and basic understanding of a situation. In this section, I seek to describe how citizens describe and characterize water accessibility in relation to other local community problems through the use of both statistical data and narratives (see Section 2.4.2 for narratives). These narratives complement the statistical summary provided in this section. Particular themes that arise from the narratives include the fact that we get an appreciation of what access to water, and reliance on vendors (or intermittent supply) actually means for people living in these contexts (e.g. stress in getting water, time spent, etc.). Based on a review of the literature on vulnerable populations in the context of the developing world, themes were identified, which were then provided for ranking. Respondents were then asked to rank these problems in order of severity.<sup>8</sup>

Table 2.1 shows the results of the mean rank values of the 10 community problems as ranked by respondents in both Ga Mashie and Madina. As can be seen, in both communities, water access was ranked as the highest community problem. In Madina, water scored a mean rank of 8.99 and in Ga Mashie water also scored 7.13. This shows that water was an issue of importance in both communities, thus it being ranked as the highest in both communities. In Ga Mashie, while transport was ranked as the least, scoring 3.58, in Madina, harassment was ranked the least scoring 2.97 (see Table 2.1). Apart from water, which citizens of both communities ranked highest, there were differences in how they ranked other community problems. It is obvious from the rankings that Madina faces challenges with both utilities (water and electricity) which were ranked as first and second in that order. While sanitation recorded the second highest mean score in Ga Mashie, in Madina, it recorded the third highest mean score. The challenge with poor sanitation management is typical in most third world cities and is certainly

---

<sup>8</sup> The ranking was done using numbers from 1 to 10. 1 was the least score and 10 being the highest score. For each of the community, the Kendall ranking shows agreement in terms of the order of the severity of the variables. The highest mean score variable remains the most important while the lowest mean score remains the least important. The Kendall W also calculates the percentage of the population that agreed to this ranking as well as the level of significance.

true for the case of Accra, as has been emphasized by many studies (See Songsore, 2009, Oteng-Ababio, 2012).

Beside the mean score ranking which shows which individual variable ranked higher or lower, the Kendall W enables one to measure the level of agreement (in percentage terms) in the ranking of the overall community problems from the highest to the least ranked (see Table 2.1). In simple terms, the Kendall W tells us the level of agreement with the ranking of the list of problems for each community. The results clearly show that water is ranked averagely as the most important problem in both communities. It is also interesting to note that for Ga Mashie, sanitation was another issue of concern as well as unemployment. It is important to note that, in both communities, this level of agreement among respondents ranking was significant (at 0.05 significance level) (see Table 2.1).

Table 2.1 Kendall's ranking of community problems

<b>Variables</b>	<b>Ga Mashie</b>		<b>Madina</b>	
	Mean rank	Position	Mean Rank	Position
Crime and safety	4.61	7 <sup>th</sup>	5.51	6 <sup>th</sup>
Water	7.13	1 <sup>st</sup>	8.99	1 <sup>st</sup>
Sanitation	6.97	2 <sup>nd</sup>	6.64	3 <sup>rd</sup>
Housing	4.42	8 <sup>th</sup>	5.52	5 <sup>th</sup>
Transport	3.54	10 <sup>th</sup>	4.37	8 <sup>th</sup>
Harassment	3.58	9 <sup>th</sup>	2.97	10 <sup>th</sup>
Unemployment	6.86	3 <sup>rd</sup>	6.35	4 <sup>th</sup>
Education	6.81	4 <sup>th</sup>	4.41	7 <sup>th</sup>
Electricity	6.41	5 <sup>th</sup>	6.98	2 <sup>nd</sup>
Disputes/conflicts	4.65	6 <sup>th</sup>	3.26	9 <sup>th</sup>
Chi square	249.949		264.986	
Kendell's W	0.235		0.368	
Asymptomatic significance (p value)	0.000		0.000	

While the Kendall's coefficient shows ranking of individual variables in each community, the Mann Whitney test as shown in Table 2.2 compares each of the 10 ten community problems against each other

as was ranked by the respondents. Table 2.2 shows the Mann Whitney test for the 10 community problems and how they are compared.

Table 2.2 Mann Whitney test for community problems

Variables	Mean Rank		Mann-Whitney U value	Significance
	Ga-Mashie	Madina		
Crime and safety	92.44	109.91	3887.500	0.034 <sup>(b)</sup>
Water	80.19	129.47	2402.500	0.000 <sup>(a)</sup>
Sanitation	103.28	95.13	4370.000	0.323 <sup>(b)</sup>
Housing	89.66	115.38	3529.500	0.002 <sup>(a)</sup>
Transport	90.14	113.30	3616.00	0.005 <sup>(a)</sup>
Harassment	107.92	87.08	3726.000	0.010 <sup>(b)</sup>
Unemployment	105.77	91.42	4073.500	0.082 <sup>(b)</sup>
Education	120.05	70.18	2374.500	0.000 <sup>(b)</sup>
Electricity	96.00	105.95	42.84.00	0.228 <sup>(a)</sup>
Disputes and conflicts	112.48	80.35	3188.000	0.000 <sup>(b)</sup>

<sup>a</sup>it is a more significant factor in Madina relative to Ga-mashie

<sup>b</sup>it is a more significant factor in Ga Mashie compared with Madin

The Mann Whitney mean ranking shows that water was ranked higher in Madina relative to Ga Mashie; 109.91 and 92.44 respectively in Table 2.2. This difference in how the two communities ranked water relative to the other is significant as shown in Table 2.2. Besides water, other community problems that Madina ranked higher relative to Ga Mashie include crime and safety, housing, transport and electricity. On the other hand, the variables that Ga Mashie ranked relatively higher compared to Madina include disputes and conflicts, education, unemployment, harassment and sanitation.

In effect, what the statistical analysis has shown suggests that, while both communities rank water as a major problem, in relative terms, the problem with water accessibility might be a pressing need in Madina relative to Ga Mashie. However, this does not suggest that it is more vulnerable in terms of access than Ga Mashie. Among the ten community problems, the mean score for water was higher in Madina compared to Ga Mashie using the Kendall coefficient analysis. Secondly, the Mann Whitney value for water in Madina was higher relative to Ga Mashie and most importantly this difference was significant.

Having looked at how citizens characterize water accessibility in relation to other community problems, I look at how local public officials understand and or characterize water accessibility. Such a comparison is very important since it affects the governance process for water accessibility including community organization and intervention approaches where necessary.

### 2.3.2 Local public official's characterization and perception about water access

In both Ga Mashie and Madina, there are dual governance structures that regulate and distribute resources. This includes traditional and formal governance systems that are made up of elected local officials and members of parliament (MP). Local elected officials called assemblymen form the lowest level of local governance structures in Ghana and their areas of jurisdiction are small localities, suburbs or towns while MPs are elected representatives for municipalities under known demarcated electoral areas who form the legislature at the national level. These two formal governance structures yield considerable influence and are more accountable to local citizens. Hence, their understanding and characterization of water accessibility has important implications in the water governance process.

From the perspective of local public officials that I spoke to in both communities, there were differences in how they understood and characterised water access and conditions. While in Madina, local public officials, specifically Assemblymen, acknowledged that there are problems with water accessibility and had taken steps with community members and external partners to address the issue, in Ga Mashie, public officials somehow tended to discount the existence of any problem with water access. In the case in

Madina, both local public officials and community members see water as an important issue for intervention (see also section 2.4.1). However, in Ga Mashie, local public officials that I spoke with understand water accessibility differently from community members who ranked water as the most important community problem. For instance in Madina, when I asked the Assemblyman for one of the electoral areas about water accessibility in the community this is how the conversation ensued:

**Interviewer:** *can you tell me about the water situation in Madina?*

**Respondent:** *is very bad. It's been about 20 years now. We thought we are close to Kpong and so should be served but they claim Madina has no reservoir and we rely on the one at Shiashie which was constructed to serve University of Ghana but not the community. The pipes that were laid were to serve a small group of people so it is bad. So in the 1970's Madina was not in this crisis but is because measures were not taken.*

**Interviewer:** *So how has the in access to water affected this community?*

**Respondent:** *Madina is a very nice and beautiful place. If there was water people would move here. Due to water scarcity they don't come. Now it's only the water vendors who serve water to the community and even those water are salty, but we have no choice.*

This characterization of water access in Madina was confirmed by another Assemblyman in a different electoral area during an interview.

**Interviewer:** *Can you tell me about water situation in Madina?*

**Respondent:** *The current water situation in Madina has been in existence since time immemorial and we as Assembly members we have done our best and the government is currently working on that. In the mean time we need some measure to address it. I made an attempt to have a bore hole for my area. I didn't get it in my area till the change from Abokobi to La Nkwatanang Municipal Assembly. We are trying to get some NGO's to help out. Individuals have also sunk boreholes for business. So more is needed to make accessibility to water easier.*

**Interviewer:** *So has your efforts yielded any support and have you had any support from the people?*

**Respondent:** *Oh my sister for water, individuals cannot solve. It takes money to get it. So the community can only think of a bore hole and the Assembly Member needs to communicate the issue to the Assembly. So we are working on that.*

In Ga Mashie, I also talked to two public officials; an Assemblyman and the head of the main development agency in the community. However, both somehow discounted the problem with water access. First this is what followed when I posed a similar question to a local Assemblyman:

**Interviewer:** *Can you tell me about the water situation in Ga Mashie?*

**Respondent:** *Oh, water, as for water we have no problem in this community. If you want to talk about water then you can go to Adenta, they have water problem. In Ga Mashie, water is not our problem.*

**Interviewer:** *But when I talked to the community members they complained about the water situation in this community.*

**Respondent:** *Oh there is water; just that sometimes it does flow but this hardly occurs. As long as you can get water from the vendors and other nearby places is not a problem.*

The conversation with the head of the most accomplished community led development agency, largely confirmed the perception held by this Assemblyman.

**Interviewer:** *so please can you tell me a bit about what your agency (GAMADA) does for this community?*

**Respondent:** *I was entrusted with 5 thematic areas; Environmental sanitation, housing improvement, education, tourism development, and local economic development.*

**Interviewer:** *Is there any specific role in water provision for your organisation?*

**Respondent:** *No we are not involved in water*

**Interviewer:** *Okay. How would you describe the water situation in Ga Mashie?*

**Respondent:** *There is water. But I know most of them buy from vendors who sell to them*

**Interviewer:** *So would you say there are problems with water?*

**Respondent:** *not really because there is water. Is only the cost that may be a problem?*

**Interviewer:** *but from our survey it seems most people see it as a problem. But to you how is it? Is the cost the problem?*

**Respondent:** *if you are of low income category and you buy water it becomes a problem*

**Interviewer:** *so finally my question is, if you want to talk about Ga Mashie and water, what can you say?*

**Respondent:** *is only the cost of buying but there is accessibility*

Apart from the fact that this official hardly sees any problem with the water situation, he further asserts that any form of intervention may not be necessary and has to be done indirectly through other forms of intervention such as addressing housing problems.

**Interviewer:** *so in solving problems of the community you don't think water should be involved?*

**Respondent:** *Yes, because of sanitation water must be supplied. Looking at the use of WC and others, water must be used. The volume of water consumed in connection with that will be high.*

**Interviewer:** *so which problem is high for this community in terms of ranking?*

**Respondent:** *housing is on top and then goes sanitation and the rest.*

**Interviewer:** *So your organisation is not involved in solving water problem but do you know any organisation helping out in water issues?*

**Respondent:** *No*

**Interviewer:** *In your opinion what will you recommend to for the water supply in this community?*

**Respondent:** *If their housing condition is improved then it will be easy to supply water*

The ensuing discussion of how water access was prioritized or not by local public officials in the two communities has important implications for improving water access and governance processes in urban Accra. In the case of Ga Mashie, there is a presumed satisfaction by local public officials of the level of water access irrespective of how local citizens characterized water access and this could serve as a major obstacle for improving the water system. An understanding of water access has important implications on the governance process including attempts at improving access to meet citizen's expectations. At least in Ga Mashie, while local public officials are satisfied with access and think the only barrier to access is cost, they do not expect any direct intervention in addressing occasional shortages, long distance and time spent to access water, and conflicts at water collection points as enumerated by citizens (see Section 3.3 in chapter 3). In addition, they believe there are other important societal problems that should merit attention and that water could be addressed through such avenues. In Ga Mashie, it is assumed that water access could be improved through housing redevelopment. However, this is just one of the many

approaches through which water could be indirectly addressed. McGranahan and Satterthwaite (2006) suggest that there are numerous routes through which poor urban households can get access to water. Some of these include community upgrading programmes, savings and credit programmes that help finance home improvements or developing new homes and measures to increase the possibilities of constructing new houses. In the case of Ga Mashie, in the short to medium term, there is no guarantee that community housing upgrading programmes that could take along with it improvement in water access, would be undertaken. Thus the understanding of access as displayed by local public officials who are supposed to lobby for such developments could affect improvement in water access to address problems raised by citizens.

In the case of Madina, there is an understanding that local public officials understand and are in tune with citizens about water accessibility issues. Both local public officials and citizens prioritise water as the most important socioeconomic issue to be addressed. Such a shared understanding has important implications for the governance process since it allows for collective organisation and participation as well as attracting other stakeholders to support water accessibility problems. Morinville, (2012) suggests in dealing with best models for underserved communities, participation or civic engagement remains the best option in terms of governance and negotiation. For instance in Madina, a local led initiative to improve water access through borehole drilling resonate with community members and has received support from local Non-governmental organisations. According to McGranahan and Satterthwaite (2006) good local governance is critical to get the best out of private as well as public providers.

The difference between the two communities in terms of how the public officials I spoke with prioritized and characterized the issue of water could be linked to the fact that in Ga Mashie, the community is already connected to the supply from the GWCL and thus officials do not find any problem with water supply. Also, in Ga Mashie, officials rather tend to notice other community problems which may also be hindering water access in the community and are focusing on getting those solved since they believe a solution to such challenges will translate into better water access. Some of these problems include sanitation, poverty and most importantly housing (GAMADA Factsheet (2008). On the hand, Madina, a relatively new community as compared with Ga Mashie, is not connected to the supply from the GWCL although there are pipelines running in some parts of the community. This makes the issue of water a major concern for officials since their ultimate focus is to get their various electoral areas to be connected to the trunk infrastructure of the GWCL. In Madina, within the areas that this research covered, officials noted that the community members were willing to pay and get connected to supply from the GWCL and thus water access remains a key priority both to officials and community members' alike.

### 2.3.3 The role of governance in water access

Understanding community level governance processes and expectations of the roles and responsibilities of various actors is important for developing or improving the water situation. In this section, I seek to achieve two things; first I look at people's expectation of the governance process at the local level in terms who people expect to advocate for their water needs. Secondly, I assess the kinds of water improvement models that people expect; whether at the community level or household level.

As discussed earlier in this chapter, there are two main governance levels existing in the community; formal and informal. The formal include publicly elected leaders while the informal include traditional leaders and opinion leaders. Respondents were asked which of these levels of governance could help advocate for their water needs. As can be inferred from the results in Table 2.3, in Ga Mashie, 38.3% of respondents forming about one third of respondents indicated that the Member of Parliament (MP) for their electoral area would be their first point of call in terms of who could advocate for their water needs. This was closely followed by the Assembly member with about 25% of the respondents indicating this response. The situation was a reverse in Madina, where most respondents thought that the Assembly member was the best to advocate for the water needs of the community followed by the MP.

Assemblymen are closer to community members and are elected by smaller areas or neighborhoods while MP's are elected by constituencies who mostly represent a cluster of towns or communities. The relatively high level of confidence (which could be a sign of trust) in the Assemblymen for Madina relative to Ga Mashie in terms of addressing water needs could possibly be explained by the fact that my interviews revealed that the Assemblymen in Madina have exhibited some commitment to engage with the community to address its water needs. This was done through his mobilization of the community and other external stakeholders to drill and mechanize boreholes for the community as was shown earlier in this chapter. In addition, the Assemblymen for Madina shared the same level of understanding in terms of water being prioritized as a major problem by the community members. In Ga Mashie, by contrast, my interviews emphasized a disconnect between perceptions of certain officials and the general public in terms of their senses and portrayal of community priorities (see section 2.4.2).

Table 2.3 Perceptions of community members expectation of various actors for addressing their water needs

Who do you think has more influence to advocate for the water needs of this community	Research Location		Total
	Ga-Mashie	Madina	
MP	38.3	27.5	34.0
Assemblyman/woman	25.0	35.0	29.0
Chief	9.2	1.3	6.0
Business and firms	1.7	0.0	1.0
other opinion leaders	5.0	12.5	18.0
Myself/ Relative/ Friend	1.7	6.3	3.5
I can't tell	13.3	13.8	13.5
Nobody	5.8	3.6	5.0
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Apart from what respondents expect from community leaders, respondents were asked if the community had taken any initiative to solve the water needs in their community (Table 2.44). As can be seen in Table 2.4, over 80% of respondents in both communities responded in the negative. On the other hand, when respondents were also asked if they thought the community could help address its water needs, less than half of respondents in both communities responded in the affirmative; 43.3% in Ga Mashie and 45% in Madina. It is interesting to note that in the case of Madina where some attempts had been made to address the water problems, very few of the respondents indicated the community could do something to improve the current water situation. This perhaps reflects the low level of success in the community led attempts since as at the time of this survey, only boreholes for community water had been constructed and the leaders were awaiting funding for mechanization. On the other hand, those in Ga Mashie, who had not made any reported attempts towards addressing their water needs, had over 40% of the respondents saying that something could be done by the community.

Table 2.4 Role of the community in addressing water problems

Questions	Community	
	Ga Mashie	Madina
<b>Has the community taken any initiative to solve the Water problems in the community? (%)</b>		
Yes	6.7	12.5
No	93.3	87.5
<b>Do you think this community can take action to address the problems with water? (%)</b>		
Yes	43.3	45.0
No	56.7	55.0

To enable a better understanding of how respondents perceive household or community level approaches to delivering or improving water access, respondents were asked to indicate their preference for either a household or community approach or both (Table 2.5). A household approach as used in the study to mean that any solutions to water problems should be targeted at the household while a communal approach means that the water needs should be looked at from the lenses of the entire community and any proposed solutions should be for the entire community and not just for a household. From the findings, half of residents in Ga Mashie preferred addressing water needs at the household level (such as in-house or in-yard pipe or private water tank) while in Madina 43.2%, preferred a communal approach (such as a community owned vendor point). In both communities some residents also thought combining both approaches; household and communal could be adopted for successful improvements in water accessibility. In this case, while in Madina, 18.8% of residents indicated that both approaches could be adopted, in Ga Mashie, 29.2% also suggested merging both approaches (Table 2.5).

Table 2.5 Options for addressing community water problems

Approaches to addressing water needs	Community	
	Ga Mashie	Madina
1. Household level	50	38.8
2. Community level	20.8	43.2
3. Both	29.2	18

In the next chapter, I build on the concept of vulnerability and entitlements to make the key argument of this thesis, which is based on the idea that although I expected that Ga Mashie would have better access and especially in times of water shortage and stress, my data proved otherwise. I therefore proceed to make an argument on the resilience of these communities and at this point it is important to state that I did not undertake a resilience analysis but I base my argument on other indicators that might suggest the resilience or otherwise of a particular society.

## **CHAPTER 3: FRAMING A COMMUNITY'S ENTITLEMENT TO WATER ACCESS IN ACCRA; A COMPLEX REALITY**

### **3.1 Introduction**

In this section, I seek to achieve two primary objectives. The first is more broadly to examine the determinants of water access in Ga Mashie and Madina. This includes how each community is able to meet its water needs in times of water supply shortages<sup>9</sup>. The second objective, which is linked to the first, is an attempt to establish how a community's ability to cope with stress in water access or not affects its vulnerability. My analysis uses what I describe as a community's entitlement to water access. I also dwell on elements associated with social capital (trust and homogeneity) in these analyses, although it is important to note that I did not undertake a detailed social capital analysis of any kind within these two communities. My research, in part speaks to trust and homogeneity, as some elements that might matter for broader debates in social capital which are more complex than the elements I employ in this work.

Following the work of Sen (1981) and applied by Wutich and Ragsdale, (2008) to water access, entitlement revolves around a bundle of ownership rights, endowments and or assets; economic and social, specific to each community that enables it to acquire "sufficient access to resources" including water. In using the term entitlements to water in this chapter, I refer to the means or process of getting access to water in a community and also use endowments to mean the capacity, power or ability that an individual or community has which could be translated into entitlements to water access. In terms of water infrastructure and socio-cultural entitlements, I am guided by the hypothesis that since Ga Mashie has better water infrastructure and socio-cultural homogeneity; it is likely to be better served in terms of water access. Lowdermilk et al., (1978) argue that the cohesiveness of a community, including its wider network of connections and its social capital, will both act as a counterweight to powerful professionals within the system and complement their input, especially in terms of resource mobilization. However, as I will show in the proceeding paragraphs, the evidence from my data demonstrate that other factors beyond infrastructure and socio-cultural homogeneity are equally important determinants of a community's water access.

In line with other works on entitlements, I argue that in determining the water accessibility of communities in low income neighborhoods in Accra, it is not enough to focus on better infrastructure or trust and homogeneity. Rather, there is the need for a more comprehensive entitlement based approach that considers multiple social, economic, cultural, institutional, and infrastructural relations such as

---

<sup>9</sup> A water shortage in this sense refers to interruptions in water supply from the GWCL that affects water supply of vendors who dominate in both communities.

income, level of education, connection to the GWCL's supply, and water sharing among households/compounds. These together constitute what I describe as the entitlements based approach to understanding water accessibility at the communal level. In this study, the ability to obtain water that a household is entitled to is based on four interdependent categories of endowments; socio-cultural, socio-economic, infrastructure, and institutional. These bundles of endowments are each defined and expanded with variable indicators as shown in Tables 3.1 (a) and (b). Thus I argue that it is only by considering the multiple perspectives to water accessibility in low income communities of Accra that one can say with some degree of certainty how one community is compared to the other in terms of better water access and ability to cope with shocks in supply. It is however important to point out that, each entitlement parameter on its own or in combination with others does not necessarily make one community more or less vulnerable, but rather there is a complex interplay of relative advantages between and within each variable which can inform how resilient one community is compared with the other. Resilience in this sense refers to how a community can cope better with existing inefficiencies in access; mostly associated with vending, as well as cope with shortages in water access which is typical of most low income communities in Accra (including in the two study sites of Ga Mashie and Madina). In relation to this, Figure 2 also shows results of the coping strategies adopted mostly by respondents in both communities in times of occasional disruptions in water supply from traditional access points.

### 3.2 Results and discussion

In Table 3.1 (a and b), there are statistical statements in relation to both the hypotheses and conclusions, but others are related to narratives and the literature.

Table 3.1 (a) An entitlement matrix showing determinants of water access

<b>Bundle of Community Endowment</b>	<b>Hypothesized effects on water access based on literature and prior expectations before undertaking fieldwork</b>	<b>Conclusions based on this study</b>
<b>1.Socio-cultura/demographic</b>		
<i>1.1 Cultural/ethnic homogeneity</i>	A neighborhood with high ethnic homogeneity has better access to water (Bowles & Gintis 2002)	High ethnic homogeneity does not readily translate into better water access (see section 3.21)
<i>1.2 Household/compound water sharing</i>	In times of water shortages, people could rely on other households or compounds with water	Evidence of water sharing in both communities (see Table 3.3)
<b>2. Socio-economic</b>		
<i>2.1 Income</i>	High purchasing power will give better water access	Both communities considered incomes as the most significant determinant in water access
<i>2.1 Level of education</i>	High level of education enhances better water access	In both communities education was not a significant determinant of water access

Table 3.1 (b) An entitlement matrix showing determinants of water access

Bundle of Community Endowment	Hypothesized effects on water access (positive/negative)	Conclusions based on this study
<b>3. Institutional</b>		
3.1 Water access as an important public issue e.g. articulated by politicians during elections	Articulation of water accessibility during elections would not enhance water access	Even though articulation of water accessibility as an election issue is common in both communities, there is no evidence to support the claim that it has enhanced water access
3.2 Shared understanding of status of water accessibility between residents and local leaders	Shared understanding of the status of water access between citizens and local leaders would enhance intervention options that would enhance water in access	In Madina where there is a shared understanding of status of water access between leaders and citizens, there is collaboration to address water access (see Section 3.2.3)
3.3 Trust in local leaders to address community water needs	Trust in institutions and local leaders is essential for addressing water needs	In both communities, citizens had less trust in institutions and leaders to address their water needs (see Section 3.2.3)
<b>4. Community location and Infrastructure</b>		
4.1 Availability of GWCL network	Neighborhoods located in areas of the city with extensive piped network have better water access (Ainuson, 2010)	Availability and connection of a community to GWCL does not necessarily enhance water access (See Section 3.2.2)

From Table 3.1 (a and b), I find that, the determinants of water access in both communities are complex and overlap between all the entitlement matrix categories. While both communities considered income as a major determinant of water access, access to land/house or the existence of a piped infrastructure does not necessarily enhance better water access as hypothesized. Again, although citizens had low trust in the ability of leaders to address their water needs, household/compound water sharing was considered a major coping strategy in both communities. In the preceding sections, I will make extensive reference to Table 3.1 (a and b) and 3.2 and Figure 3.1 to show the complexities in water access, coping strategies and their relationship with community resilience/vulnerability.

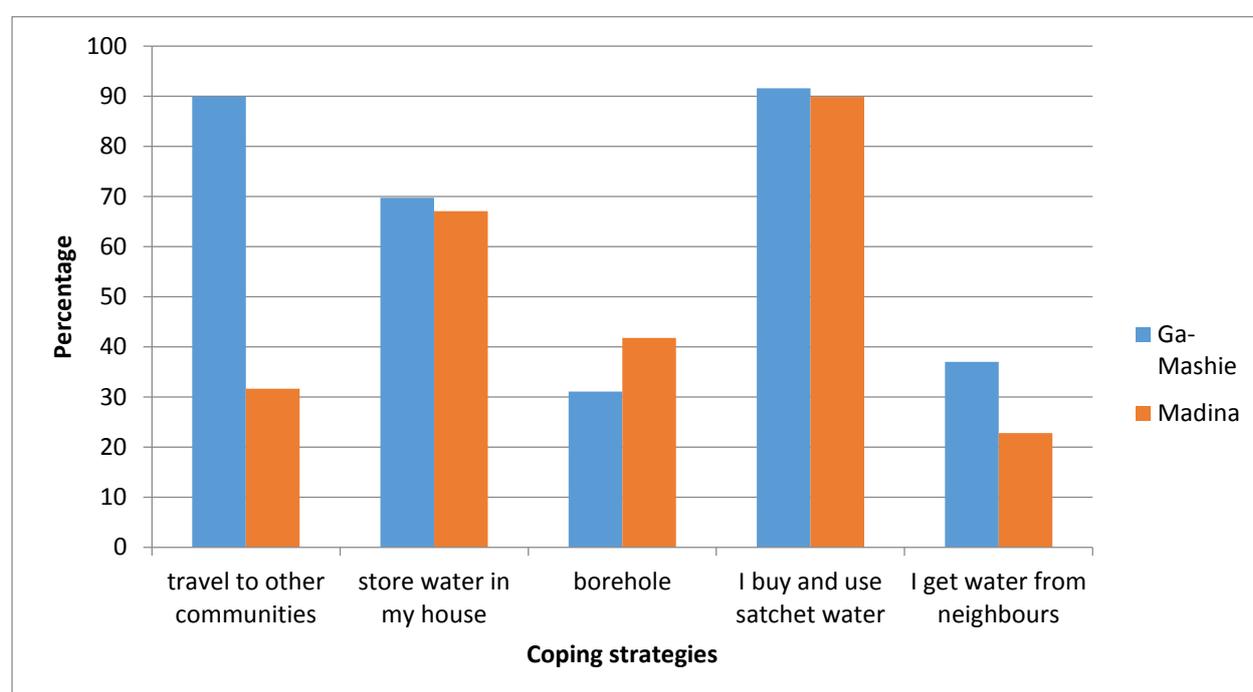


Figure 3.1 Coping strategies to access water in the absence of water from regular water sources for domestic use

(Source: Fieldwork, 2013).

Table 3.2 shows Kendell Analysis of ranked variables for determinants of water access. The low mean ranked values are interpreted as having the highest ranked values and vice versa. This is because in the questionnaire, respondents were asked to rank the variables on a scale of 1-5, with 1 being the most important and 5 the least important (see survey instrument in Appendix 1).

Table 3.2 Kendell Ranking of perceptions on determinants of water access

Research Location		Mean Rank
Ga-Mashie	Size of family	2.57
	Ownership of land/house	3.14
	Educational	4.12
	Income	1.56
	Participation in community meetings	3.61
Madina	Size of family	2.15
	Ownership of land/house	3.16
	Educational	3.69
	Income	1.48
	Participation in community meetings	4.53

### 3.2.1. The role of socio-cultural entitlements in water accessibility between Ga Mashie and Madina

In reference to the study communities, socio-cultural entitlements can come in various forms that are largely related to the socio-cultural history of the community. In relation to water accessibility, two socio-cultural variables are considered determinants for water access (See Table 3.1 (a and b) from 1.1 and 1.2). A major hypothesis that I will critically examine in this section is that a community with greater cultural homogeneity will have better water access than a culturally (ethnically) heterogeneous one.

Social or cultural homogeneity can be important for resource access especially in times or places of shortages for resources such as water (Wade, 1988). In particular, social homogeneity can affect the emergence, sustenance and outcome of collective action (Singleton and Taylor 1992) and the number of social ties and norms that a community can draw upon in building cooperation (Subramaniam et al., 1997). It is argued that high cultural homogeneity can be linked to long term community networks and stability and is likely to enhance collective action and mutual support (Bowles and Gintis 2002). In this study, Ga Mashie is an indigenous community with high cultural homogeneity compared to Madina which is a portrait of ethnic diversity. Thus based on the premise, one would expect households in Ga Mashie to have better water access and coping strategies in relation to Madina. However, in the case of Ga Mashie, this research found that cultural homogeneity does not provide the associated benefits such as long term community networks that enhance collective action and mutual support in relation to water access. In terms of collective efforts to address water issues,

there was no evidence found of communal action or long term community networks for water access in Ga Mashie. On the other hand, in the case of Madina which is an ethnically diverse community and presupposes collective action to address water could be absent, there was some evidence of collective/communal action to address water access and other issues. There is an institutionalized meeting of all landlords within the community which meets regularly to find solutions to community problems including water.<sup>10</sup> Through such meetings, the community has embarked on borehole drilling at sites identified by the community itself. As at the time of the study, some community members/land owners had given up portions of their land and the boreholes had been drilled pending their mechanization. According to one of the assemblymen, they hope to operate the boreholes at the community level and sell the water at prices lower than what private vendors charge.

The above findings could be important in understanding community level entitlements and associated vulnerability to water access. While the culturally/ethnically diverse nature of Madina could be a disincentive for mobilizing for collective action especially involving community led interventions the findings of the study has shown that this is not the case. Thus in some instances, notwithstanding socio-cultural heterogeneity, what this study reinforces is that, scarcity (shortages) can be a rallying point for collective action. A study by Wade (1988) in India found water scarcity and the resulting risk of crop loss led socio-culturally diverse villages to overcome the obstacles to collective action and form irrigation associations to manage the irrigation system. Following from this, Madina's ability to organize collectively and address its water needs notwithstanding its cultural/ethnic homogeneity could be linked to its relative lack of piped water infrastructure (compared to Ga Mashie), which has provided a converging incentive to work together to achieve a common purpose, notwithstanding barriers to collective action.

Water sharing also remains an important socio-cultural determinant of water access. In this study, during times of water stress, one of the identified coping strategies in both communities was household/compound/community water sharing (Figure 3.1 and table 3.1 (a and b). According to Nyarko et al., (2008) "water sharing with neighbors remains the main coping strategy for low income households compared with high income households who relied more on tanker services" (p.418). Ribot and Peluso (2003), suggest that, social relations can provide links to individuals and institutions with the ability to make and implement laws, as well as to networks of friendships and obligations that can strongly influence the ability to gain and maintain access to the distribution and use of a resource. Thus, on the basis of this, one would have expected that water sharing would be encountered more in Ga Mashie than in Madina. However, as shown in Figure 3.1 and Table 3.3, water sharing either at the communal, compound or household level was not exclusive to Ga Mashie. In all

---

<sup>10</sup> Revealed by the Assemblyman for one of the Electoral Areas in Madina.

instances, more respondents in Ga Mashie reported some form of sharing compared to Madina. In general, this suggests that, high cultural or ethnic affinity might not necessarily convey better coping strategies in terms of water sharing but also the networks beyond one's ethnic group are also important in times of water stress even in ethnically diverse neighborhoods. So what accounts for this phenomenon in these two communities?

Table 3.3 Forms of household/communal water sharing

Questions	COMMUNITY	
	Ga-Mashie (%) (N=120)	Madina (%) (N=80)
Do households share water in this compound?	54.2	36.2
Can you borrow water from your neighbor when you do not have water	42.0	27.8
Are you and your household able to rely on other households when you need water	45.8	42.5

In both communities, respondents who reported sharing water conducted this with either relatives, neighbors or both. However, in Ga Mashie, it was revealed during the focus group meeting that, community members rarely share water with neighbors and that most forms of sharing are largely shared with relatives in extended family settings. In Ga Mashie, most households live in compound houses which also house other family members and it is therefore not surprising that water sharing was common among relatives compared with neighbors. In Madina, however, there was the tendency for water sharing to be done with neighbors who could be living in different compound units. In Madina most households live in rented housing units either in compound or single unit houses with other families from different ethnic groups or kinship. My observations based on insights from the field and synthesis of my data suggest that, sharing water with neighbors instead of close family relatives could open more avenues for diverse adaptation since dependence on other neighbors beyond the same house compound may expand the choices and access options as opposed to people from the same family living in the same house compound as happens in Ga Mashie.

### 3.2.2 Entitlements related to socio-economic variables and effects on community water access

The socio-economic factors considered for determinants of water access are income and level of education (2.1 -2.2 in Table 3.1 (a and b). Table 3.2 shows the determinants of water access that

respondents were asked to rank. In both communities, income emerged as the highest ranked variable. A good income enhances the purchasing power of people and in the case of water access, it determines the type of water access options that a person could have especially in times of water stress. As illustrated by Sen (1981), the ability of people to command resources through the legal means available to them in the society is a function of their production possibilities, trade opportunities, entitlements, and other methods of acquiring resources. Stoler et al., (2012) suggest that 50% of respondents in their survey in Accra depending on sachet water were the lowest income consumers while higher income earners mostly patronize bottled water which is deemed to be of more quality than sachet water. Again, the high incidence of dependence on vendors instead of the GWCL (even though the community has the infrastructure) in Ga Mashie illustrates the important role of income in water access. The above discussions suggest that, in the context of low income communities, it is not enough to extend piped water access and expect that residents would automatically be connected or have access. In Ga Mashie, due to inability to pay monthly bills for water, most households were disconnected and have to depend on vendors for their daily needs for water which is more flexible to pay. In this context, understanding the needs and working with communities to come out with the best models for extending piped water could reduce their level of vulnerability.

Besides income, education is another important socio-economic determinant of water. The educational level of respondents in both communities was relatively low with most people attaining primary and or secondary education (see Table 2.2). The low educational level is typical of many low income communities. High levels of education enhances ones job prospects and by extension purchasing power. However, in this study, respondents in both communities ranked one's level of education among the least of determinants for water access (see Table 3.2).

### 3.2.3 Entitlements related to the role of institutions and effects on community water access

The extent to which community leaders can engage the rest of the community to address common problems is important for improving the governance process (Table 3.1(b)). In this study, both local leaders and community members in Madina have a shared understanding of the status of water accessibility in the community (as discussed in chapter 2, section 2). Both communities highlight and prioritize water as the most important social problem. As stated earlier, in Madina, this has enabled them to organize and initiate measures to address the water needs particularly related to cost. Thus in Madina, there is evidence for the idea that community members and local leaders dialogue about their water situation.

In Madina, beyond a shared understanding between community members and leaders, there was also evidence of seeking external partners to help address water needs of the community. They had received the support of an NGO to enable them to drill boreholes. Related to this, the community through the assemblyman and landlords had meetings with the local district assembly who promised to help them mechanize the drilled borehole. Besides this, both assemblymen that I spoke to confirmed that they were in discussion with some of the commercial establishments in Madina such as Melcom<sup>11</sup> to support the borehole drilling project after they had made an appeal to them. Wutich and Ragsdale (2008), suggest that gaining entitlement to water via market or mutual exchange systems requires residents to continuously engage in dialogues and arguments about their rights to water access. This collective communal action is surprising since the dominant literature seems to suggest that community heterogeneity (as is the case in Madina) contributes to disputes over communal resource management (Fresson 1979). Tang (1992) cited in Kähkönen, (1999) also suggests that, in some situations the existence of different social and cultural groups can inhibit coordination in collective action by increasing the cost of organizing collective action. However, in these cases, this might be opposite since Ga Mashie which is socially and culturally homogenous to a large extent and therefore one would expect ease in collective action, neither had a shared understanding between local leaders and citizens about the water needs of the community or attempts at addressing the problem. This could be a reflection of poor community organization and engagement.

The second institutional related entitlement and its effects on water access relates to the extent to which issues of water are articulated by public elected officials (Table 3.1 (b)). The study sought to find out if water accessibility issues form part of election campaign messages for those who run for public office and how that affects the water governance process in these study communities. In Ghana, there are two main elections organized at the national level; national elections meant to elect the president and parliamentarians (MPs) and district level elections meant to elect assembly members for the various district assemblies. Table 3.4 shows the responses when respondents were asked if the issue of water formed part of campaign messages in their respective communities as political leaders engaged with them.

In Ga Mashie, about 31% said water formed part of campaign messages during the assembly elections while about 39% said that it formed part of the messages during the national elections. In contrast, in Madina, more than half of the respondents noted that water issues formed an important part of campaign messages during both the assembly and general elections. The difference in the responses from the two communities can be explained by a number of factors. First, the relatively low use of water (about one third agreement) in electioneering campaign by elected public officers is because Ga

---

<sup>11</sup> A private owned wholesale outlet which also doubles as a retail store and is located nationwide

Mashie is connected to the city’s supply. Here it is assumed that once the city’s trunk water system is available, issues of access are resolved. This feeds back into the reason why local leaders in Ga Mashie denied the existence of water accessibility problems contrary to what residents suggested. On the other hand, in Madina there is absence of the city’s trunk water infrastructure. Residents in Madina therefore have a sense of governmental neglect and therefore politicians articulate water issues in their campaign messages and promises to address these issues which may never be fulfilled once they come into power.

Table 3.4 Role of elections in water characterization

Questions	Community	
	Ga Mashie	Madina
<b>In the last assembly elections, did the issue of water form part of the campaign</b>		
Yes	30.8	56.2
No	68.3	43.8
Missing	0.8	
<b>In the last general elections, did the issue of water become an important issue</b>		
Yes	39.2	55.0
No	60.8	43.8

### 3.2.4 Entitlements related to infrastructure and its effects on community water access

It is often argued that in cities with extensive piped network connections, citizens are more likely to get water easily than those in cities with very limited urban network piped connection (Ainuson, 2009). Evans (2007) argues that, the physical location of a neighborhood in relation to piped infrastructure is an important determinant of access. In most instances, distant locations to piped water, lack of voice, and everyday lived experiences of many poor neighborhoods form their greatest vulnerability in accessing services which are currently, often captured by the urban elite. In such instances, vulnerability can rise when people are physically isolated, insecure and defenceless in the face of risk, shock or stress (Shah, K. U. et al., 2013; Cutter, 1996). In the context of this study and given that Ga Mashie is located in the part of the city with the most extensive formal piped network (GWCL) it would seem to suggest that, their access to water might be better compared to Madina which is physically isolated from the city centre and formal piped water connection. In this sense, not only would Ga Mashie be expected to have better water access but be less vulnerable in times of

stress. But as I will show in this section, better water infrastructure may not necessarily lead to better access and less vulnerability.

First, the assumption of better piped infrastructure connoting better access greatly hides the condition of other vulnerable groups in localities who may be constrained by other factors to access water. Such factors might include multiple community vulnerabilities such as low income. Other similar factors may also be equally important in determining access. The case of Ga Mashie highlights this phenomenon. As has been shown in the earlier sections of this study, Ga Mashie has a piped water infrastructure and is one of the first communities to enjoy piped water in Ghana. However, findings from this study show that, less than one third of the respondents are directly connected to piped water in their homes which is similar to Madina that has no piped water infrastructure. Thus in the context of low income communities in Accra, better water infrastructure should be defined more broadly beyond the existence of piped water infrastructure. Since majority of respondents derive their water daily from vendors which they consider convenient in terms of payment arrangements and affordable in the short term. In the case of Ga Mashie, in addition to low incomes, increasing population density, housing blight and changing household dynamics (Dapaah, 2010; GAMADA, 2000) have shifted the daily water supply from house compounds to individual commercial vendors. According to Sen (1982) disproportions in resource delivery comes out of the social structures that lie beneath resource distribution and not necessarily the absence of resources. Thus people can lack access to resources even if there is an abundance of it as a result of a collapse in their means of command over the resource (Leach et al., 1999, p.232) which is the case of Ga Mashie. Evans (2007) captures this dilemma and suggests that though some poor communities may sometimes be close to transmission mains, they could also be excluded from service provision captured by the urban elite.

### **3.3 Relationship between community water entitlements and vulnerability**

As shown earlier in this section, the mere presence of piped water infrastructure might not necessarily mean access to direct piped connection for households. However, the presence of piped water in a community or location of a community in relation to piped infrastructure can evoke forms of community vulnerability related to water access in terms of its effects on cost for water, ease of water getting water in times of water stress and time spent getting it.

In Figure 3.1 where coping strategies are shown, it can be observed that one of the significant differences between Madina and Ga Mashie is that residents of Ga Mashie are able to depend on or travel to nearby communities in times of water stress because they are located in a part of the city with extensive piped water connection. In times of water stress, almost 90% of respondents in Ga Mashie reported that they travel to other communities to get water, compared with Madina, where only about

31% reported traveling to other communities (Figure 3.1). In Accra, water is normally rationed<sup>12</sup> to enable the GWCL serve different communities at different times due to low production volumes compared with demand for water (Ainuson, 2010, Peloso, 2014). As a result, while Ga Mashie may be without water, other nearby communities may have water due to the rationing schedules. This is not the case in Madina where other neighboring communities also lack access to piped water. In terms of the ability to draw on other nearby communities for water in times of disruptions in supply, Madina might therefore be more vulnerable relative to Ga Mashie. However, it is important to emphasize that, although in times of water disruptions, most community members in Ga Mashie fall on neighboring communities (Figure 3.1), residents complained of longer travelling distances to access water which evokes different form of community vulnerability to water access.

The conversation below with an opinion leader in Ga Mashie illustrates how pervasive walking to distant communities for water is within the community.

**Interviewer:** *so when there are water shortages what do you do?*

**Respondent:** *Everybody is trying for himself where to get water. We don't come together to think of where to get water and how to solve the issue in a meeting or calling the MP or the Assembly men. If you realize water is flowing at a distant community say (Korle Gonno), you go there and find water for yourself. That is the life here.*

Moreover, in the Focus Group Meeting (FGM) with men, similar sentiments were expressed concerning walking in search of water. The discussants were asked about the water situation in Ga Mashie and the responses were focused on trekking for long distances in search of water. As one young man said

*“When they close the taps, searching for water is very difficult, it is very difficult. When they close the pipes you now have to walk to this place, London, down the hill and go and carry water to this community. I think if they make pipes for us nearby it will help us a lot, maybe they can do something like a manhole to store water so that if they close the pipe we can get a place to fetch water to bath and go to work” (Young man, August 2013).*

Another young man in his late 20's added that;

---

<sup>12</sup> Due to population growth and mismanagement in urban water supply, demand for water far exceeds the water production capabilities of the existing water treatment plants. GWCL implements a water rationing program for distributing water within the city. Estimates show that, 75% of Accra lacks 24-hour water access while another 10% has no access at all. The rationing programme varies geographically and socioeconomically by neighborhood in Accra. See Stoler et al., 2012; 2013 for extensive notes on water rationing in Accra.

*“What they are saying, that is how it is. Sometimes when they close the pipe, London’s water does not flow. You have to take a car to Agege or Mamprobi before you get water so for the water they have to help us over here” (Young man, August 2013).*

Even during normal periods of water access from regular supply sources in both communities, there were significant differences in time spent to access water (Table 3.5). Based on the differences, in terms of time spent in getting access to water, I hypothesize that:

- $H_1$ = Residents in Ga Mashie spend more time in getting water (due to crowding, few vendor points, etc) than residents in Madina
- $H_0$ = Residents in Ga Mashie spend equal amount of time in getting water as the residents in Madina

Table 3.5 shows the time spent in getting water as reported by respondents in Ga Mashie and Madina. Even during regular periods of water supply, residents in Ga Mashie spend more time accessing water compared with Madina as is shown in Table 3.5.

Table 3.5 Time spent getting water (in minutes)

Statistics	Community	
	Ga Mashie	Madina
Mean	35.56	9.68
Maximum	300	40
Minimum	1	1
<b>Chi square test of time spent to access water</b>		
Pearson Chi-Square	46.210 <sup>b</sup>	
Significance	0.002	

As can be seen from Table 3.5, it is interesting to note that the mean reported time spent in getting access to water in Ga Mashie was as high as 36 minutes while that of Madina was just about 10 minutes. On the other hand, in Ga Mashie the maximum minutes spent could be as high as 300 minutes (5 hours) whilst in Madina this is just around 40 minutes. The chi square analysis shows a p value of 0.002 and at 5% significance level. I reject the null hypothesis that residents in Ga Mashie spend equal time to access water as residents in Madina. The long period it takes for residents in Ga Mashie to access water relative to what residents in Madina reported could be explained by many factors. There are often heavy periods of disruption in water supply within the city as a whole and since Ga Mashie is connected to the GWCL’s supply they are also severely affected. Also, in Ga

Mashie water retail services are not as widespread as in Madina as was my observation during the fieldwork in 2013.

Linked to the broader concern related to vulnerability in times of water stress, the narratives above suggest that residents in Ga Mashie tend to spend longer time at water collection points and also have to travel longer distances to access water. This could be considered an aspect of vulnerability in terms of how water shortages and the search for water affect the daily lives of residents. Madina, on the other hand is located in a part of Accra where housing and other infrastructural developments have outpaced utility service provision and hence, other communities located equally close have no piped water infrastructure. It does not make sense therefore to travel to other nearby communities for water during periods of shortage because the situation is often the same. However, Madina has a well-developed water vending system due to decades of operation of water vending compared to Ga Mashie which may be a recent phenomenon. In Madina, my observation shows that, commercial water vending was often within reasonable distance from households and that a good percentage of house compounds offered some form of water vending or the other. In fact, water vending is a major commercial activity for most home owners. Moreover, in Madina, community water vendors may derive their source of water from different tanker operators who may enjoy the supply from different areas within the city where there is piped water connection. Due to these reasons, the consequences of interruptions in water supply in the city are less felt in Madina.

Another perspective through which the location of a community in relation to piped infrastructure might affect access to water and notions of vulnerability is the price or cost of water. Table 3.6 provides a summary of the price range of water in both communities. First, it is important to emphasize that, unless there are interruptions in water supply, the cost of water in Ga Mashie is relatively cheaper compared to that of Madina. As shown in Table 3.6 in Ga Mashie for most instances, the cost of water stays relatively low; below 20 pesewas per jerry can (a jerry can is 50 litres. see plate 3 for what a typical jerry can looks like). However, the price can shoot up to over 100% when there are interruptions in supply as vendors begin to cash in on consumers. Prices tend to reverse when the situation normalizes i.e. when water supply to the piped network is restored. Table 3.6 shows that about 69% of respondents reported that the price per jerry can of water is between 40 - 50 pesewas which is almost double the price for which people in Ga Mashie pay for a jerry can of water. The chi square results confirm that the cost of water per gallon is more expensive in Madina compared to Ga Mashie (see Table 3.6). Meanwhile, the GWCL rates are lower than what vendors charge<sup>13</sup>. In Accra, many low income and slum residents pay vendors close to eight times the GWCL

---

<sup>13</sup> The PURC approved tariff for GWCL residential areas using between 0-20m<sup>3</sup> for a unit volume of a 1000 litres, was priced at 129.6 pesewas ([http://www.purc.com.gh/sites/default/files/2013\\_TARIFF\\_PROPOSALS\\_\(PRODUCTION\).pdf](http://www.purc.com.gh/sites/default/files/2013_TARIFF_PROPOSALS_(PRODUCTION).pdf))

utility prices (United Nations Development Programme 2006; cited in Stoler et al., 2012), and up to twenty times in dryer periods (Taylor et al. 2002; cited in Stoler et al; 2012).

Thus in terms of cost of water, there is a higher burden on residents of Madina and therefore they might be considered more vulnerable compared with Ga Mashie. The relatively vulnerable status of Madina in terms of cost is largely a function of their physical location due to population growth and poor planning (Evans, 2007) as they are excluded from the city’s water supply system. As a result, water sold by vendors goes through a number of channels; from GWCL, tanker operators, community vendors, and in the process the cost of transportation as well as other expenses are passed on to the consumer. Madina is actually one of the fastest growing settlement in Ghana and the tenth largest settlement in Ghana by population (Ardayfio-Schandorf et al, 2012). This growth has come with little overall control or vision for development of core services such as water. Moreover, population growth has resulted in the ‘densification’ of existing neighborhoods which could place additional demands on existing services while making extending piped water infrastructure increasingly technically challenging. This may make the unit cost of both wholesale and retail services unattractive to the utility/city service provider (Evans, 2007).

Table 3.6 Different forms of water burden between Ga Mashie and Madina

Burdens in water Access	Community		Total
	Ga-Mashie	Madina	
<b>Cost of water per jerry can</b>			
less than 20p	52.5	8.8	35.0
20p	35.0	5.0	23.0
30p	9.2	17.5	12.5
40p	2.5	33.8	15.0
50p	0.8	35.0	14.5
Total	100	100	100
<b>H<sub>0</sub> = Cost of water per gallon is less expensive in Madina compared to Ga-Mashie</b>			
Pearson Chi-Square	117.593 <sup>a</sup>		
Significance	0.000		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 10.00.

Another interesting dimension of water vending that evokes issues of vulnerability is quarrelling and conflicts particularly at water collection points. In both communities accessing water through vendors, there is a high tendency for residents to congregate at water collection points. In Table 3.7, I show the responses that were given when respondents were asked if people quarrel or fight in their community as a result of inadequate water supply or when there is a water shortage. According to the Table 3.7, in Ga Mashie as much as 85% of the citizens reported that there were quarrels or fights in the community when there are water shortages while in Madina about 43% of respondents also reported same.

Table 3.7 Different forms of community vulnerability in relation to water access

Questions	Research Location		Total
	Ga-Mashie	Madina	
<b>Do people quarrel or fight in your community as result of inadequate water supply or when there is water after shortage</b>			
No	18 (15.0%)	46 (57.5%)	64 (32.0%)
Yes	102 (85.0%)	34 (42.5%)	136 (68.0%)
Total	120 (100.0%)	80 (100%)	200 (100%)
X <sup>2</sup>	39.844 <sup>a</sup>		
Significance	0.000		

The result of the chi square analysis shows a significant relationship between the two communities in terms of fighting or conflicts at water collection points and thus, residents in Ga Mashie are more prone to conflicts at water collection points. Fighting at water collection points may be explained by a host of factors. At most water collection points, there is no 'proper' order as to who fetches first and who is next, hence the potential for conflicts to emerge over whose turn it is for water is high especially during shortages. For instance, in Ga Mashie where crowding is major issue combined with the fact that there are few water vending points (compared with Madina), in periods of water shortage, the possibility of conflicts emerging at water collection points is very high. Also, the situation is compounded by the fact that in Ga Mashie, vendors sell water directly from the city's water supply system through their taps (instead of large storage tanks as exist in Madina). However, the taps could be off for days and in the midst of that anywhere that has some water in the community will be crowded with people attempting to be served first. Moreover, since most people in Ga Mashie live

with their kinsmen, the tendency for vendors to show favoritism by serving one's kinsmen first is high. In the event of this occurring, some people might take offence and fights might occur.

The last and perhaps controversial point about the reason for fighting at water collection points in Ga Mashie is that, culturally, the Ga's (ethnic group) are known to be "fighters." Ga Mashie is the center for grooming boxers in Ghana and the community has produced all the renowned boxers in Ghana to date (Quarcoopome, 1993; UN Habitat, 2011; Mahama et al, 2011) including the famous Azumah Nelson. Hence, for most young males, boxing is a major economic activity and therefore fighting at an early stage is common and a show of a potential ability to advance one's boxing abilities for many who dream of becoming professional boxers. Hence, it will be expected to see people in Ga Mashie fighting to settle an issue than dialoguing to do same.

### **3.4 Conclusion**

In concluding this chapter, I argue that, in the context of Accra's low income communities, access to water is not ubiquitous and that even in communities with similar socioeconomic attributes, other socio-cultural, institutional and infrastructural conditions are important determinants of water access. A community is merely a geographical entity and may not necessarily engender a sense of collectiveness. Thus while networks are important for the creation of social capital, there is a danger of taking a romanticized view of networks, or "the community." Amin (1996) warns of the danger of ignoring the fact that "civil society is an arena for social contestation in which power struggles exist and affect which groups control which resources and what they do" (p.327). It is evident that in Madina, water access is more pervasive, cost of water is high, less time is spent in getting water and there are dialogues to address the water situation and water supply is mainly from vendors. It is also evident that in Ga Mashie there is a connection to the GWCL, cost of water is relatively cheaper, water supply is erratic and based on a rationing schedule, and most people rely on vendors. All of this come together to tell a very complex story in that there is no clear evidence of what makes a community have better entitlements to water. Adding to debates related to the importance of entitlements and community for access, we learn that what enables entitlements is surely more complicated than infrastructure, and surely more complicated than homogeneity as a key feature of what makes a site a 'community'.

## **CHAPTER 4: CONCLUSIONS AND POLICY RECOMMENDATION**

### **4.1 Introduction**

In this study, I employed a comparative study analysis to examine water access and governance challenges in two socio-culturally differentiated neighborhoods of Accra. Chapter one gave an introduction to the entire thesis, tracing current trends of water governance and access in Ghana as a whole and specifically within the GAMA. In chapters two and three I presented the results and discussions highlighting the multiple routes through which both study communities (Ga Mashie and Madina) access water and how this evokes differentiated senses and pathways of vulnerability. Through household surveys, interviews with community leaders and observation, I showed that access to water in both communities was not solely a function of location in relation to piped water infrastructure, but also depended on the opportunity for collective action, socio-economic attributes, and the shared/unshared perceptions between community members and leaders in terms of the status of water access. In this concluding chapter, I relate my findings to the literature by drawing on the previous chapters. I call for a re-examination of what it means to have “access to improved water sources” in the context of low income communities based on my data. This call is an important call on local governance processes to improve water access, as well as for broader debates such as those related to achievement of the Millennium Development Goals or efforts of the Joint Monitoring Program (WHO and UNICEF, 2012). Finally, I conclude by making recommendations on the kind of governance reforms that could suit specific localities to move away from any tendency to promote a “one fits for all” governance policy for improving water access.

### **4.2 Summaries**

#### 4.2.1 Understanding improved water access in low income neighborhoods: a re-examination of national/global standards

Based on the WHO/UNICEF Joint Monitoring Programme (JMP) on water and sanitation, Ghana has made significant progress in expanding access to improved sustainable water sources. The JMP lists the improved sustainable drinking water sources or delivery points to include pipe water, borehole, protected dug wells, protected springs, and rainwater collection. According to the JMP, between 1990 and 2010, access to improved sustainable water sources moved from 53% to 86% respectively (UNICEF and WHO, 2012), making Ghana one of the few countries across sub-Saharan Africa to meet the MDG targets of halving the proportion of people without access to improved water sources. However, what this report does not say is the means through which people access these improved sustainable drinking water options as well as the spatial differences within and across cities. The data from my comparative study of two low income communities in the metropolitan region of Accra,

Ghana, provides significant contextually specific details about how or the means through which improved water sources are met and whether they are sustainable, or may even contribute to vulnerabilities variously defined.

In both communities, the frequently used mode of access to water is delivered by intermediaries who are individual private commercial entities (vendors) while the main utility water producer (GWCL) has a limited role (in the case of Ga Mashie) or no direct role (in the case of Madina) in providing water to these low income communities. Unfortunately, the Public Utilities Regulatory Commission (PURC), which is mandated to regulate the activities of utility service provide is only able to protect only consumers who have piped water access (which is largely enjoyed by relatively rich areas of the city). However, the PURC has no control over the activities of private water vendors—the predominant mode of access in low income communities. Thus this raises environmental justice concerns as consumers are exposed to affordability challenges, quality considerations, or the potential for unfair pricing from vendors. Beyond the activities of commercial water vendors, an increasingly important source of water largely for drinking and also for household use in times of shortage is sachet water. Sachet water may not fall within the improved sources considered by the WHO/UNICEF Joint monitoring programme on water and sanitation. However, in Ghana currently, sachet water has become a ubiquitous form of drinking water for both low and middle income households.

Even in a neighborhood such as Ga Mashie that has piped water infrastructure, the proportion of households with in-house connection has dwindled over time with less than 15% of my sampled respondents using piped connection as their primary water source. This mirrors what is happening at the national level where between 1990 and 2010, access to piped water connection dwindled from 41% to 33% (UNICEF and WHO, 2012) respectively. Thus, although access to improved drinking water sources may be increasing in Ghana, the pattern shows that the increases are more tilted towards public stand pipes in the case of Ga Mashie and commercial vendor water tanks in Madina (tanks are filled with piped water) and protected wells (in the form of commercial vendor boreholes). Yet, under current conditions, commercial water vending may not be the most efficient compared with in-house pipe connection which is decreasing. Thus the reported quantifiable leap in access to improved water sources needs qualification to reflect actual situation that pertains on the ground.

Although water vending may provide a convenience means for low income households to access water (Peloso and Morinville, 2014), this may not be the most efficient and sustainable (Songsore, 2008) as some forms of vending such as commercial vendor tanks and community stand pipes may expose consumers to possible risks. For instance, in Ga Mashie stored water to be sold to consumers was poorly covered and placed along the ends of streets, exposing it to possible contamination. Thus there is a discrepancy between global/national level “definitions of `access and what happens at the

local level. According to Songsore (2008) and as confirmed by this study, global/national definitions of access in most cases do not capture how people have access and where issues of crowding at the service point leading to conflicts, efficiency in the operation of the service, affordability, and travel time, may act as barriers to access. These barriers to access which are often hidden behind the numbers need to be considered in any discussion on improved water sources in the context of low income communities. This shows that, what determines a community's access to water is more complex and that the narratives behind the reported incremental access to improved water sources are important for understanding the conditions of the poor with respect to water access. Even if the much touted idea of extending piped water access to all low income communities are achieved, this would not guarantee access unless the barriers to access are addressed.

#### 4.2.2 Understanding determinants of water access and related vulnerabilities in low income communities

In this study I have shown that even in low income communities, access to water is not straight forward. What determines water access is complex and often maps onto different aspects of vulnerability. A community's access to water revolves around a bundle of endowments which translates into entitlements and enables people to negotiate for their daily water access. These bundles of endowments can be socio-cultural, socio-economic, or based on community location, infrastructures and institutions. In this section, I look into how community location and infrastructure as well as socio-cultural determinants translate into entitlements.

The location of a community in relation to piped water infrastructure is an important but yet contested factor in commanding access to water. Although the availability of piped water infrastructure within a community or its adjoining neighborhood, may not guarantee access to water, it can however reduce the relative cost for water as is the case in Ga Mashie. In Ga Mashie where piped water infrastructure is available within the community and neighboring suburbs, the cost of water is half the cost in Madina where there is no piped water and residents can also travel to other communities in times of shortage. Thus in Madina, there is a higher burden of cost on households to purchase water which can enhance their vulnerability to access because of low incomes. In Accra, it is estimated that, the cost of purchasing water from vendors could reach 10% of the monthly income of a low income households (Songsore, 2008). A recent work by Stoler et al., (2010) suggest that in Accra, residents pay "four times as much for water by volume than New Yorkers, slum residents are paying vendors up to eight times the local public utility prices (United Nations Development Programme 2006), and up to twenty times in dryer periods (Taylor et al. 2002)" (p. 3).

In Ga Mashie where piped water is available, in times of water shortage, walking in search of water from other neighborhoods is a huge challenge for residents. Respondents reported spending more time to access water compared to Madina. In Ga Mashie, vendors derive the source of their water directly from GWCL and therefore in times of shortage have limited options to supply water to consumers, making households more vulnerable. However, in Madina, because there is a general perception of water scarcity, water vending is pervasive while also vendors derive their water from mobile tanker operators who source the water from different areas in the city. Hence, water shortages are less felt in Madina and households tend to spend less time to access water. In Ga Mashie, not only do households spend more time to access water but have to contend with high propensity for conflicts at water collection points because of few vendors operating in the community.

In examining the water access options in low income neighborhoods, it is important to also consider the socio-cultural make-up of the community since this can inhibit or encourage collective action to address inadequate access. While it is generally known that cultural/ethnic homogeneity could facilitate community led action to address common problems, in this study, my data shows that cultural/ethnic homogeneity may not necessarily enhance collective action but rather, water scarcity, could be an important rallying point to facilitate collective action even in culturally heterogeneous communities such as Madina.

In concluding this section, we learn that it is important to understand the factors that constrain or enhance people's access to water within specific neighborhoods since it can inform intervention options to improving access. For some communities, while cost may remain a barrier to access, for others, conflicts, time and distance to access water may remain the main barriers and dimensions of vulnerability. In addition, knowing the socio-cultural make up of a community can be very important in exploring different governance pathways for improving water access.

#### 4.2.3 The role of local governance in improving water access

In this section, I draw from results of chapters 2 and 3 to explore the governance process in the two study communities and how that influences water access. As was stated in chapter 2, the governance systems in these communities include traditional (chieftaincy system especially for Ga Mashie) and formal government (elected local public officials) structures. Though traditional governance structures do not have direct or primary responsibility for meeting the needs of citizens, traditional authorities are highly respected and accorded very important roles in both national and local politics. In most instances, traditional authorities play an advocacy role by becoming a voice for the concerns of their community. On the other hand, elected local public officials (assemblymen and members of parliament), have a direct responsibility for speaking on behalf of their constituents (communities)

that elected them. As was shown in chapter 2 section 2.4.3, there were differences in terms of which of the governance structures community members expected to advocate for their water needs. While respondents in Madina largely had higher expectation of their assemblyman relative to the MP to advocate for their water needs, the reverse was in Ga Mashie where the respondents had higher expectation for the MP. So what could explain this phenomenon and how does that inform us about the local governance process? Assemblymen are closer to community members and are elected by smaller areas or neighborhoods while MP's are elected by constituencies who mostly represent a cluster of towns or communities. The relatively high level of confidence (which could be a sign of trust) in the Assemblymen for Madina relative to Ga Mashie in terms of addressing water needs could possibly be explained by the fact that the my interviews revealed that the Assemblymen in Madina have exhibited some commitment to engage with the community to address its water needs. This was done through his mobilization of the community and other external stakeholders to drill and mechanize boreholes for the community as was shown in Chapter 2. In addition, the Assemblymen for Madina shared the same level of understanding in terms of water being prioritized as a major problem by the community members. In Ga Mashie, by contrast, my interviews emphasized a disconnect between perceptions of certain officials and the general public in terms of their senses and portrayal of community priorities (see chapter 2 section 2.4.2).

In this study, there was no evidence of the involvement of traditional and opinion leaders in addressing water needs although traditional leaders are very influential in the Ghanaian society as a whole. Among the roles often attributed to traditional leaders, they work to settle disputes, to allocate crown and family lands,<sup>14</sup> and serve as intermediaries between their subjects and ancestors (a belief often held by adherents of Traditional religion). It is especially interesting to note that although Ga Mashie is an indigenous community where chiefs wield considerable influence, the role of traditional authority was not of much importance as only about 9% of the people said the chiefs were the most influential people who could advocate for their water needs. In Madina, this was even smaller as only about 1% of the sampled population thought that the chiefs were the best to advocate for their water needs. But this is largely understandable in the case of Madina since it is a migrant community with a conglomeration of ethnic groups and tribal chiefs (often 'Zongo'<sup>15</sup>community chiefs) who yield little or no influence except in the predominantly Muslim neighborhoods. In both communities, the relatively low expectation of chiefs and opinion leaders to address water needs could suggest that, in the area of water, people's expectation of chiefs and opinion leaders is quite low. A study by Mensah et al., (2014) in the Akuapim North District in Ghana suggest that traditional authorities played

---

<sup>14</sup> Lands that have not been sold to individuals are often family or royal lands that are often held in trust for the people or subjects by the chief and cannot be sold without their approval.

<sup>15</sup> Zongo is a Hausa term which means camping place of travelers but was used by the British colonial administration to refer to any segment of a town where Muslim traders lived

various roles related to community planning and development in the areas of provision of housing, education, healthcare, water, and transportation networks. However, it is interesting to note that most of these roles are specifically related to providing land for these projects since most lands in Ghana are under the control of traditional authorities.

There is therefore a higher expectation of formal local governance structures to advocate for a community's water needs than traditional governance structures. Yet, even among the formal governance structures (MP and assemblyman), one was more preferred than the other in both communities with regards to advocating for a community's water needs. The level of expectations expressed by citizens in local leaders could be a proxy indicator of levels of trust in local leaders. A study by Harris et al., (2012) in Accra provides evidence of the level of trust that citizens have in their government when they are able to get access to water. In the study, 56% of respondents in Ghana did not trust government officials. Antwi-Bosiako and Bonna (2009) also suggest that, there is no trust in public officials in most parts of democratic Africa and for the public to gain the trust of a bureaucratic, he/she must conduct themselves in a manner that suggest high professional and ethical standards. Fukuyama, an important social capital theorist, largely equates social capital with trust and suggests that social capital is a capability that arises from the prevalence of trust in a society or in certain parts of it (Fukuyama, 1995, cited in Adam and Rončević, 2003).

Within formal governance structures, elections provide a platform for citizens and local community leaders to dialogue about water access (see chapter 3.2.4). However, as I emphasized in this same section, in Ga Mashie, almost one third of respondents confirmed that water issues formed a major part of campaign messages during public elections but in Madina, more than half of respondents confirmed that water issues formed a major campaign messages public elections. For instance in the lead up to the 2008 elections, a report published by 'Modern Ghana' an online news agency had the Member of Parliament for the Madina area (who is still the MP) promising his constituents that the water problems in his area would be reduced or eliminated by the end of the year; thus 2008. The report read;

*"The Member of Parliament for Abokobi–Madina Constituency has assured the people in his constituency that the water crisis in the area will soon be over". The Report continues "He said, "the assurances given to me in Parliament is that by October this year the water crisis in this constituency will be drastically reduced if not eliminated" (Nyamekye, 2008).*

Although such dialogues are common especially during elections in areas without piped water access, the water situation largely remains the same. This is because in areas without piped water access in locales such as Madina, it is possible that residents are more attuned to a sense of governmental neglect and it becomes easier to promise extending piped water access during electioneering

campaign. Meanwhile, in places such as Ga Mashie, it is assumed that once the city's trunk water system is available, issues of access are resolved. Thus what this report suggests is that, there is a lot of focus on extending piped infrastructure largely because it is more convenient and cheaper compared to those sold by vendors. Yet, my data shows that, even in situations where piped water infrastructure exists, water is nonetheless intermittent and unreliable to the extent that communities with dependence on piped water become more vulnerable (at least in certain respects) relative to areas where vendors dominate. Thus while water vending may seem undesirable from the perspective of policy makers, or from a perspective that foregrounds affordability, there are other clear advantages in communities with well-developed vending systems such as Madina. As such, elements of this work echoes earlier assessments related to the need to attend to the disadvantages, and advantages, of informal vending dominated systems, such as what exists in contexts like Madina (see Peloso and Morinville, 2014).

#### 4.2.4 Models for addressing water at the community level

Beyond the expectations of community members on what elected or local officials could do to address the water needs of a community, community members (collectively as a group of individuals with a common need) have a very important role to play its water needs. In chapter 2, I showed that with the exception of Madina where some attempts have been made by the community through the support of the Assemblyman, in Ga Mashie there was little by way of community input or approach towards addressing their water needs. However, this does not suggest that the community might not come together to address other issues of mutual interest. In the work of Peloso (2014), in Ashaiman; a suburb of Accra, residents seem more likely to mobilize on wellbeing or broader community interest but not necessarily on water per se. This is similar to the case in Ga Mashie as during the period of my research in the community, I could not find any group that was formed around a water theme in an attempt to find such groups (leaders) for further deliberations on water access. However, almost all the existing community groups and NGOs were focused on addressing issues around poverty, as well as through focus on street children. Despite the lack of any group action on water, more than one third of community members see themselves making a contribution in Ga Mashie. Combined with the fact that, in Madina there had been some attempts to address its water problems albeit its limited success, the implications is that in such low income communities, though community members see themselves as important stakeholders and that there is potential for enhanced engagement to address problems with water access, community level approaches are not enough and that in such instances, external support could be very critical in boosting existing community initiatives. As broader context for this claim, consider as well that work in other areas in Accra suggested that majority of residents generally

felt they could make a contribution to water governance processes (based on work in Ashaiman and Teshie, Harris and Morinville, 2013).

In both communities water access is derived either at the community level through commercial vendors or directly to the household through the GWCL or both. Most importantly, when respondents were asked what modes of access they preferred beyond what they had (section 2.4.3), the findings do not support a single model but a mixture of vendor supported water provision (either commercial stand pipe or commercial water tanker vendor) operating at the community level and household connection through a piped system. The preference for such diversity of water sources by respondents suggest that the water delivery mode is most likely to be delivered more effectively by more than one service provider (Bakker, 2003). In line with this, Evans (2007) advocates for a water supply chain comprising utility, local government, and private providers, civil society organizations, and/or the household itself where there is disaggregation of roles and responsibilities. Such a system could be fully explored and which could help integrate the role of vendors and therefore bring their operations under the regulators eye.

In conclusion, while there has been very limited attempt to incorporate informal water vending into the mainstream water delivery routes in practice and at the policy level, in low income communities such as my study sites, vending may provide a convenient and secure form of meeting everyday water needs. It is therefore important that, local leaders and the GWCL connect with communities to explore options for meeting the specific water needs of communities which could be economical, minimize the distance travelled to water collection points and also reduce conflicts at water collection points. While there are expectations from community members for local leaders to show more commitment to the water needs of citizens, community members see themselves as important stakeholders to improving the water governance process in their communities. Communities have also shown the potential to mobilize on diverse issues affecting their life and this presents an untapped opportunity to engage with them and find lasting solutions to their water needs. The fixation with extending formal piped water to all communities must give way to community oriented, practical and sustainable solutions that meets the present needs of communities.

### **4.3 Conclusions and synthesis: policy directions**

Access to water in areas generally characterized as low income communities such as exists in Accra are not the same and straight forward as is often assumed in policy circles. Although extending piped water infrastructure to low income neighborhoods could go a long way to reduce some of the vulnerabilities related to access (such as cost and travel distance to access water), the presence of piped water infrastructure may not necessarily enhance water access in the context of low income

communities given the level of impoverishment. It is therefore important, first, to define and understand the water access routes that is available to people and what they aspire to have. This would serve as a basis for any governance reform that seeks to address current challenges. For instance in Ga Mashie even with piped water infrastructure, defining access and understanding the water access routes might have to address the intermittent nature of supply from the GWCL, the ease with which people can pay for water on a daily basis instead of monthly, quality of the water, density of people at water collection points and conflicts at collection points as well as and the role of vendors. On the other hand, in defining access in Madina, we might consider cost of water, role of vendors and quality of existing water access routes from where water tankers bring water to the community. Knowledge of this background information can be very important for exploring different pathways for improving access, as well as governance possibilities associated with such improvements.

As suggested by McGranahan and Satterthwaite (2006) compared with promoting investment in water and sanitation infrastructure, promoting better governance may seem very vague and ill defined. This is because there is often a tendency to select a particular model of water and sanitation governance, and to promote that model as inherently better than others. For instance, in the water sector, there is continuous focus on seeking for investment to implement so-called best models involving private sector participation (PSP) and centralized piped network approaches. Yet, these are driven by western ideas about development, the state and modern city (Kaika 2005; Swyngedouw 2004; Kaika and Swyngedouw 2000 cited in Monrinvile, 2012) that may be very difficult to implement in many developing nations under current conditions. Besides, the evidence shows in several urban areas where they have been implemented that they have failed to extend water access to under-served areas. McGranahan and Satterthwaite, (2006) and Songsore (2008) note that in promoting the development of centralized pipe networks under the shadow of PSPs has only worked for the rich and already served areas of cities. What this suggests is that, what may be perceived as better water governance models at the policy level are largely driven by political and global hegemonic trends that have little to do with experience in the water sector at least from the perspective of some developing nations including Ghana. Thus there is the need to promote models that tend to account for the roles and needs of different social groups that could prove to be sustainable. For instance, as has been shown in this study, poor households consume water by paying for it on a daily basis because of low incomes since paying on a daily basis ensures that water consumed reflects daily available funds (Gleick 1996 cited in Wutich and Ragsdale, 2008). Thus any proposed improvement towards water access in such communities but ignores this understanding is likely to be unsustainable, or will meet specific obstacles at least in the near term.

As this study has highlighted, although extending piped water access could be key to reducing vulnerabilities associated with water access, small-scale and informal water vending currently

provides a major pathway for water delivery and access. Morinville (2012) draws on the broader literature to catalogue a number of potential promises that small scale water vending provides including; serving where the formal utility does not reach (Cavé, 2009 cited in Morinville (2012; Kjellén and McGranahan 2006), operating strictly on full-cost recovery and without government subsidies, flexible and largely based on local innovations (Stoler et al., 2012) and demand-responsive or customer-focused (Cavé 2009 cited in Morinville, 2012). While Morinville (2012) suggests that often arguments for small scale water vending tends to be celebratory and “pregnant with possibilities and, perhaps naively, anticipating benefits and positive outcomes,” she also argues that despite possible limitations, vending is “often downplayed in favour of the potential benefits for water access in underserved communities” (p.48). In this study, while acknowledging some limitations of vending, the findings suggest the need to rethink the notion that, small scale vending is a symptom of a failure of the state in the context of Ghana. In Ghana, such thinking has for decades prevented any attempt to build on and improve the potential benefits associated with small scale vending or regulate the activities of vendors to enable them function effectively within the official governance process.

In essence, the findings of this study have reinforced the point that care must be taken in proposals for governance reforms in any particular setting since different localities might call for different responses. At the metropolitan wide-level of Accra, while extending piped water infrastructure to all neighborhoods may sound ideal, this may not necessarily guarantee access and that in Accra’s low income neighborhoods, a thorough understanding of locally specific challenges with inadequate water access involving dialogue with all stakeholders in the water governance process; communities, water vendors, local community leaders (chiefs and opinion leaders and elected representatives) could help enhance access and reduce vulnerabilities in water access. On the other hand, reducing current vulnerabilities in water access could involve policies and actions that favour reasonable pricing of water, reduce crowding at water collection points and ensure reliability of water provision. In seeking to improve water access to the studied communities, it is important that communities are actively engaged in the process and their expectations of improvement considered in order to enhance successful outcomes. In my study communities, there is a complete absence of the main utility service provider GWCL, actively engaged with the community to improve its current water needs while commercial water retail vendors with no legal and administrative oversight have taken over the water delivery process.

In Ga Mashie, despite the existence of a piped infrastructure the dominance of water vendors questions the rhetoric and general hegemonic argument for centralized pipe water networks. Although it provides valuable insights into the conditions of the poor in terms of access, this could be tied to bigger and more complex structural imbalances in national development as the old city centre has seen a general decline in socio-economic development for decades. The decay of the local economy,

high population density, and crowding in multi-habited house compounds have made sourcing water at the pipe in households more difficult and makes it practical to depend on vendors. Taking into cognizance the daily dependence of most households on vendors for their supply of water, the unfettered role of vendors should be monitored to reduce the burden on the poor. Whiles there is no doubt that the neighborhood (Ga Mashie) needs to be regenerated through targeted developmental intervention options particularly in poverty reduction and housing, in the short to medium term, meeting basic needs such as water remains a priority. This is because its status as an old city centre with a well-connected water infrastructure presents an opportunity to build from and improve upon. Whiles the tendency for reforms and investment in the water sector in Accra has often focused on large scale infrastructure particularly in underserved peri-urban areas, in areas such as Ga Mashie a different intervention approach that involves the private sector, government and community members is needed. This could involve expanding access through opening new water vending points in a form of partnership between the water company, government and the community to enhance its sustainability and resilience. This is important to reduce the long waiting times at water collection points, coupled with conflicts and the long searches for water in times of shortages which enhance the community's vulnerability in water access. Building partnerships for water and improving water access is very important since good local governance is critical to getting the best out of private as well as public providers (McGranahan and Satterthwaite, 2006).

Madina's status as an underserved community suggests that, in the long term, the push for expanding piped water infrastructure should continue. On the other hand, the success of private vendor initiatives in the community suggests that, with the right policies and partnerships, government and other stakeholders can introduce model community standpipes or boreholes that would enable wider access and reduce the high cost of water which is a major concern in Madina. There is evidence to suggest that, in many locations, working with and through such independent providers can be a cheaper and effective way of improving and extending provision for water than conventional public-sector provision or reliance on large-scale private (often international) firms (McGranahan and Satterthwaite 2006). As a matter of equity it is important that the needs of Accra's increasing peri-urban communities are factored into on-going development interventions and that developing community model water projects with the tacit involvement of the people in terms of their needs and expectation would be a good starting point.

## REFERENCES

- Adam, F., & Rončević, B. (2003). Social capital: recent debates and research trends. *Social Science Information, 42*(2), 155-183.
- Adank, M., Darteh, B., Moriarty, P., Osei-Tutu, H., Assan, D., & van Rooijen, D. (2011). Towards integrated urban water management in the Greater Accra Metropolitan Area. *SWITCH (Ed.). Accra, Ghana.*
- Adger, W. N. (2000). Social and ecological resilience: are they related? *Progress in human geography, 24*(3), 347-364.
- Adger, W.N., (2006). Vulnerability. *Global Environmental Change 16* (3), 268–281.
- Adhikari, B., & Tarkowski, J. (2013). Examining Water Governance: A New Institutional Approach. *J Geogr Nat Disast S, 5*, 2167-0587.
- Agyei-Mensah, S. and Owusu, G. (2009). Segregated by neighborhoods? A portrait of ethnic diversity in the neighborhoods of the Accra Metropolitan Area, Ghana. *Population, Space and Place, 16* (6), p. 499-516. DOI: 10.1002/psp.551.
- Agyei, P. A., Awuah, E. & Oduro-Kwarteng, S. (2011). Faecal sludge management in Madina, Ghana. *Journal of Applied Technology in Environmental Sanitation, 1*(3), 239-249.
- Ainuson, K. G. (2010). Urban water politics and water security in disadvantaged urban communities in Ghana. *African Studies Quarterly, 11*(4), 59-82.
- Ainuson, K.G. (2009). *Ensuring Adequate Water Supply to Disadvantaged Urban Communities in Ghana*. (Doctoral Dissertation). Available from ProQuest Dissertations & Theses database.
- Amin, A. (1996). Beyond associative democracy. *New Political Economy, 1*(3), 309-333.
- Anderies, J. M., Janssen, M. A., & Ostrom, E. (2004). A framework to analyze the robustness of social- ecological systems from an institutional perspective. *Ecology and Society, 9*(1), 18.
- Antwi-Boasiako, K. B., & Bonna, O. (2009). *Traditional institutions and public administration in democratic Africa*. Xlibris Corporation.
- Araral E. and Yu D. (2012). Water governance: Critique, Theory and Evidence from Asia. <http://lkyspp.nus.edu.sg/wp-content/uploads/2013/04/Water-governance.pdf>
- Ardayfio-Schandorf E, Yankson P. W. K., Bertrand M. (2012).\_The Mobile City of Accra. Urban Families, Housing and Residential Practices. Codesria

- Bakker, K. (2003.a) *Good Governance in Restructuring Water Supply: a Handbook*. Federation of Canadian Municipalities, Ottawa: p. 44.
- Bakker, K. (2003.b). Archipelagos and networks: urbanization and water privatization in the South. *The Geographical Journal*: 169(4), 328-341.
- Bowles, S., & Gintis, H. (2002). Social capital and community governance\*. *The Economic Journal*, 112(483), F419-F436.
- Creswell, J. W. (2009). *Research Design: Qualitative, Quantitative and Mixed Methods Approaches*. (3rd ed). SAGE Publications Ltd, London
- Cutter, S. L. (1996). Vulnerability to environmental hazards. *Progress in human geography*, 20, 529-539.
- Dapaah E.K (2011), *Urban Poverty among Indigenous Coastal Communities in Ghana: A Case Study of Ga mashie* (Unpublished Undergraduate dissertation) University of Ghana, Legon.
- Erzuah H., (2014). Sachet water prices up by 10%.  
[http://www.adomonline.com/news\\_details.php?article=23331#sthash.Uasw82Xc.dpuf](http://www.adomonline.com/news_details.php?article=23331#sthash.Uasw82Xc.dpuf). Jul 8, 2014
- Evans, B. (2007). Understanding the urban poor's vulnerabilities in sanitation and water supply. *Innovations for an Urban World, the Rockefeller Foundation's Urban Summit, Bellagio, Italy, July*.
- Fayorsey, C. (1995). Ga women's autonomy: A critique of the concepts and economy of the household and family. *African Anthropology* 2 (1): 91-130
- Field, M. J. (1940). *Social organization of the Ga people*. Crown agents for the colonies
- Franks T., and Cleaver F. (2007). Water governance and poverty: a framework for analysis. *Progress in Development Studies* 7; 291. DOI: 10.1177/146499340700700402
- Fresson, Silviann (1979). "Public Participation in Village Level Irrigation Perimeters in the Matam Region of Senegal." In D. Miller (ed.), *Self-help and Popular Participation in Rural Water Systems*, Paris: Development Center, Organization for Economic Cooperation and Development.
- Fukuyama, F. (1995). Social capital, civil society and development. *Third World Quarterly*, 22 (1); 7-20
- Ga Mashie Development Agency (GAMADA) (2006) *Ga Mashie 2015 Development Strategy*. Accra Metropolitan Assembly.

- GAMADA (2005). Ga Mashie Development Strategy, September 2005. Accra, Ghana
- GAMADA Factsheet (2008): Background Information of Ga Mashie (Old Accra) Development Project. Accra, Ghana
- Ghana Integrity Initiative (2011). *Ghana's National Water Supply Integrity Study: Mapping Transparency, Accountability & Participation in Service Delivery: an Analysis of the Water Supply Sector in Ghana.*
- Ghana Statistical Service (2003) 2000 Population & Housing Census. *Summary Report of Final Results.*
- Ghana Statistical Service (2012) 2010 Population & Housing Census. *Summary Report of Final Results.* Sakoa Press Limited
- Ghana Statistical Service (2013) 2010 Population & Housing Census. *National Analytical Report.*
- Goldin, J.A. 2013. The participatory paradigm: anathema, praise and confusion. Pp.179-184 in L.M. Harris et al. (eds.), *Contemporary Water Governance in the Global South: Scarcity, marketization and participation.* New York: Routledge.
- Gough K. V., Tipple A.G & Napier M. (2003). Making a Living in African Cities: The Role of Home-based Enterprises in Accra and Pretoria. *International Planning Studies*, 8 (4); 254-277.  
<http://r4d.dfid.gov.uk/PDF/Outputs/R71382.pdf>
- Gyasiwaa A (2014) Sachet water price goes up by 50%.  
<http://www.myjoyonline.com/business/2014/February-7th/sachet-water-price-goes-up-by-50.php>: 07-02-2014
- Habitat, A. M. A. U. (2011). Participatory slum upgrading and prevention: millennium city of Accra, Ghana. *Accra: AMA.*
- Harris, L. (2013). Elements of Feminist Political Ecology and Capabilities. In J. Goldin (Ed). *Water and Capabilities Special Issue.* E-bulletin of the Human Development and Capability.
- Harris, L. M., & Morinville, C. (2013). *Improving Participatory Water Governance in Accra, Ghana.* Centre for International Governance Innovation.
- Harris, L., Darkwah, A. & Goldin, J.A. (2012). *Water Access and Participatory Governance Survey of Household in Informal Settlements of Accra, Ghana and Cape Town, South Africa.*
- Harris, L.M., Goldin, J.A. and Sneddon, C. (Eds.). (2013). *Contemporary Water Governance in the Global South: Scarcity, Marketization and Participation.* New York: Routledge.

International Federation of Red Cross Society. What is vulnerability?

<http://www.ifrc.org/en/what-we-do/disaster-management/about-disasters/what-is-a-disaster/what-is-vulnerability/>

Kähkönen S. (1999). Does social capital matter in water and sanitation delivery? A review of literature. Social Capital Initiative, Working Paper No. 9

Kjellén, M., & McGranahan, G. (2006). *Informal water vendors and the urban poor*. International Institute for Environment and Development.

Lam, Wai Fung (1998). *Governing Irrigation Systems in Nepal: Institutions, Infrastructure, and Collective Action*. San Francisco: ICS Press

Langridge, R., Christian-Smith, J., & Lohse, K. A. (2006). Access and resilience: analyzing the construction of social resilience to the threat of water scarcity. *Ecology and Society*, 11(2), 18.

Leach M, Mearns R, and Scoones I. (1999). Environmental Entitlements: Dynamics and Institutions in Community-Based Natural Resource Management. *World Development*, 27 (2) pp. 225-247.

Lowdermilk, M.K., A.C., Early and D.M. Freeman. (1978). *Farm irrigation constraints and farmers response-comprehensive field survey in Pakistan*. Water Management Technical Report No. 48, Colorado State University, Fort Collins, Colorado, USA.

Mahama, A.S., Acheampong, A.T., Peprah, O.B., and Bofofo, Y.A. (2011). Preliminary report for Ga Mashie Urban Design Lab, Spring 2011. Millennium Cities Initiative (MC1)

McGranahan, G., & Satterthwaite, D. (2006). *Governance and getting the private sector to provide better water and sanitation services to the urban poor*. London, England: International Institute for Environment and Development.

Mendis-Millard S, and Reed M. G. (2007). Understanding Community Capacity Using Adaptive and Reflexive Research Practices: Lessons from Two Canadian Biosphere Reserves. *Society and Natural Resources*, 20:543–559

Mensah, C. A., Antwi, K. B., & Dauda, S. (2014). Female Traditional Leaders (Queen Mothers) and Community Planning and Development in Ghana. *Environmental Management and Sustainable Development*, 3(1), 205-220.

Merriam, S. B. (1995). What Can You Tell From An N of 1?: Issues of Validity and Reliability in Qualitative Research. *PAACE Journal of Lifelong Learning*, Vol. 4, pp 51-60.

- Meybeck, M. (2003). Global analysis of river systems: from Earth system controls to Anthropocene syndromes. *Philosophical Transactions of the Royal Society of London. Series B: Biological Sciences*, 358(1440), 1935-1955.
- Morinville, C. (2012). *Beyond the pipe: participation and alternative water provision in underserved areas of Accra, Ghana*. (Master's Thesis). Available from <https://circle.ubc.ca>
- Moser, C. (1998). The asset vulnerability framework: Reassessing urban poverty reduction strategies. *World Development*, 26, 1-19.
- Narayan, D. and L. Pritchett (1997), "Cents and Sociability: Household Income and Social Capital in Rural Tanzania", Policy Research Working Paper 1796. The World Bank Social Development and Development Research Group
- Nyamekye S., (2008). Abokobi-Madina MP Assures Constituents of Regular Water Supply. <http://www.modernghana.com/news/165372/1/abokobi-madina-mp-assures-constituents-of-regular-.html>. 14 May 2008
- Odotei, I. (1991) External Influences on Ga Society and Culture. *Research Review* Ns Vol. 7 Nos 1 & 2.
- Osumanu, I.K. and Abdul-Rahim L. (2008). Enhancing community-driven initiatives in urban water supply in Ghana. 33rd WECD International Conference, Accra, Ghana.
- Oteng-Ababio, M. (2012). The role of the informal sector in solid waste management in the GAMA, Ghana: Challenges and opportunities. *Tijdschrift voor economische en sociale geografie*, 103(4), 412-425.
- Oxford Online, Dictionary. Accessed, September, 12, 2014.
- Paller, J. (2012). Political Accountability in Ghanaian Slums: Evidence from the grassroots. *Presentation at the Centre for Democratic Development. Accra, Ghana.*
- Parker, J. (2000). *Making the Town: Ga State and Society in Early Colonial Accra*. Oxford: James Currey.
- Peloso, M. (2014). *Navigating water access and governance in peri-urban Ashaiman, Ghana: A case study* (MA Thesis). Institute for Resources, Environment and Sustainability, The University of British Columbia, Vancouver, Canada.
- Peloso, M., & Morinville, C. (2014). 'Chasing for Water': Everyday Practices of Water Access in Peri-Urban Ashaiman, Ghana. *Water Alternatives*, 7(1).

- Public Utility Regulatory Commission (Ghana). (2013). Press release: Approved electricity and water tariffs 1st October 2013.  
[www.purc.com.gh/purc/sites/default/files/approved\\_electricity\\_and\\_water\\_tariffs\\_2013.pdf](http://www.purc.com.gh/purc/sites/default/files/approved_electricity_and_water_tariffs_2013.pdf)
- Putnam, R. (1993a). *Making democracy work: Civic traditions in modern Italy*. Princeton, NJ: Princeton University Press.
- Quarcoopome, S.S. (1993) A History of the Urban Development of Accra: 1877 – 1957, *Research Review (NS)*, 9(1&2): 20-32
- Razzu G. (2004). *Social Exclusion in Old Accra: Cultural Heritage as a Solution? Habitat International*. Central Economic Advise Division, Bressenden Place, London SW1E 5DU, UK.
- Ribot, J. C., & Peluso, N. L. (2003). A Theory of Access\*. *Rural sociology*, 68(2), 153-181.
- Sackey B M. and Badru P. (2013). *Islam in Africa South of the Sahara: Essays in Gender Relations and Political Reform*. Scarecrow Press, United Kingdom
- Sakyi Addo. Ghana's water battle heats up. <http://news.bbc.co.uk/2/hi/africa/3145001.stm>  
 Tuesday, 12 August, 2003, 16:24 GMT 17:24 UK
- Sen, A. (1981) *Poverty and Famines: An Essay on Entitlement and Deprivation* (Oxford, Clarendon Press).
- Shah, K. U., Dulal, H. B., Johnson, C., & Baptiste, A. (2013). Understanding livelihood vulnerability to climate change: Applying the livelihood vulnerability index in Trinidad and Tobago. *Geoforum*, 47, 125-137.
- Silverman, D. (2010). *Doing Qualitative Research*. (3rd ed). London: Sage Publications.
- Singleton, S., & Taylor, M. (1992). Common property, collective action and community. *Journal of Theoretical Politics*, 4(3), 309-324.
- Smit, B., & Wandel, J. (2006). Adaptation, adaptive capacity and vulnerability. *Global environmental change*, 16(3), 282-292.
- Sneddon, C. (2013). Water, governance and hegemony. pp. 13-24 in L.M. Harris et al. (eds.), *Contemporary Water Governance in the Global South: Scarcity, marketization and participation*. New York: Routledge.
- Songsore J. (2008). Environmental and Structural Inequalities in Greater Accra. *The Journal of the International Institute* 16 (1); p.8-13.

- Songsore J. (2010). The urban transition in Ghana: urbanization, national development and poverty reduction. Study prepared for the IIED as part of its eight country case studies on urbanization. <http://pubs.iied.org/pdfs/G02540.pdf>
- Songsore, J. (2009). The urban transition in Ghana: Urbanization, national development and poverty reduction. *University of Ghana, Legon–Accra*.
- Songsore, J., Nabila, J.S., Yangyuoru, Y., Avle, S., Bosque-Hamilton, E. K., Amponsah, P.E., and Alhassan, O. (2009). Integrated Disaster Risk and Environmental Health Monitoring: Greater Accra Metropolitan Area, Ghana In, Pelling, M. & Wisner, and B. Wisner B. (eds). *Disaster Risk Reduction: Cases from Urban Africa*, Earthscan, London, pp. 65-85
- Statstodo.com Kendall's W [http://www.statstodo.com/KendallW\\_Exp.php](http://www.statstodo.com/KendallW_Exp.php)) Accessed on May 3rd, 2014
- Stoler J, Fink G, Weeks JR, Appiah Otoo R, Ampofo JA, et al. (2012). When urban taps run dry: Sachet water consumption and health effects in low income neighborhoods of Accra, Ghana. *Health & Place* 18: 250–262. doi: 10.1016/j.healthplace.2011.09.020
- Stoler, J., Weeks, J. R., & Otoo, R. A. (2013). Drinking water in transition: a multilevel cross-sectional analysis of sachet water consumption in Accra. *PloS one*, 8(6), e67257
- Subramanian, A., Jagannathan, N. V., & Meinzen-Dick, R. S. (Eds.). (1997). *User organizations for sustainable water services* (Vol. 354). World Bank Publications.
- The Daily Guide (Editorial) (<http://www.dailyguideghana.com>. Retrieved on February 22, 2014).
- Twumasi, P. A (2001). *Social Research in Rural Communities*. Second Edition, Ghana Universities Press, Accra.
- UNICEF and World Health Organization (2012). *Progress on Drinking Water and Sanitation: 2012 Update*. <http://www.unicef.org/media/files/JMPReport2012.pdf>
- United Nations (2008). *United Nations Declaration on the Rights of Indigenous People*. Resolution adopted by the General Assembly (217). [http://www.un.org/esa/socdev/unpfii/documents/DRIPS\\_en.pdf](http://www.un.org/esa/socdev/unpfii/documents/DRIPS_en.pdf)
- Wade, R. (1988). The management of irrigation systems: how to evoke trust and avoid prisoner's dilemma. *World Development*, 16(4), 489-500.
- Water and Sanitation Sector Monitoring Platform (WSMP) (2009). *Status of Ghana's drinking water and sanitation sector*, Accra: WSMP.
- Wisker, G. (2008). *The postgraduate Research Handbook*. Second Edition. Palgrave Macmillan.

- World Health Organization (2010). GLAAS 2010: UN-water global annual assessment of sanitation and drinking-water: targeting resources for better results.
- WSA HLF (2013). Models for Community Participation in the Delivery of Urban WASH Services: Experiences from Ghana. USIAD. <http://hlf.wsafrika.org/wpcontent/uploads/2013/12/Models-for-Community-Participation-in-the-Delivery-of-Urban-WASH-Services-Experiences-from-Ghana.pdf>
- Wutich, A. (2007). Vulnerability, Resilience, and Robustness to Urban Water Scarcity: A Case from Cochabamba, Bolivia. *SOURCE: Journal of the UN Institute on Environment and Human Security*. 6, 61-70
- Wutich, A. & Ragsdale, K. (2008). Water insecurity and emotional distress: Coping with supply, access, and seasonal variability of water in a Bolivian squatter settlement. *Social Science & Medicine*, 67, 2116-2125., 67(2116- 2125).

Appendix 1: Survey questionnaire

**INSTITUTE OF RESOURCES, ENVIRONMENT AND SUSTAINABILITY  
UNIVERSITY OF BRITISH COLUMBIA**

*Water Governance, Delivery and Access Among Indigenous and Migrant Low Income Communities in the Greater Accra Metropolitan Area (GAMA), Ghana.*

This is a research being undertaken by a student of The Institute of Resources, Environment and Sustainability of the University of British Columbia on the state of *Water Governance, Delivery and Access Among Indigenous and Migrant Low Income Communities in the Greater Accra Metropolitan Area (GAMA), Ghana* with reference to ‘Ga- Mashie’ and ‘Madina’ as the study areas. This information is being gathered for academic purposes, publications, and conferences only and will be held in confidentiality. The identity of participants will not be disclosed and their privacy will be strictly observed. (Please read full consent language for verbal consent prior to conducting the survey).

**Please tick the appropriate answers where applicable.**

<b>A. RESPONDENT DETAILS/ SOCIO- DEMOGRAPHIC DATA</b>					
<b>A.1</b>	Verbal consent given (check)	[ ]	<b>A.2</b>	Time interview started	
<b>A.3</b>	Questionnaire No.		<b>A.4</b>	Code	
<b>A.5</b>	Neighborhood (circle)	i. Ga- Mashie      ii. Madina			

A.6 Gender

a. Female [ ]

b. Male [ ]

A.7 Age of Respondent

a. 18-29 [ ]

b. 30-39 [ ]

c. 40-49 [ ]

d. 50- 59 [ ]

e. 60+ [ ]

A.8 Ethnic Origin

a. Ga- Adangbe [ ]

c. Mole- Dagbani [ ]

b. Ewe [ ]

d. Akan [ ]

c. Foreigner [ ]

e. Others .....

A.9 What is your highest educational attainment?

a. None [ ]

b. Non-Formal Educ. [ ]

c. Primary [ ]

d. Middle/JSS [ ]

e. SSS/'O' Level. [ ]

f. Comm/Voc/Technical [ ]

[ ]

g. Post Sec./Nursing/Polytechnic [ ]

h. University [ ]

i. Other (specify) [ ] \_\_\_\_\_

A.10 Religion

a. Christian [ ]

b. Muslim [ ]

c. Traditional [ ]

f. others [ ]

A.11 What is your marital status?

- |                                  |     |                          |     |
|----------------------------------|-----|--------------------------|-----|
| a. Married                       | [ ] | d. Widowed               | [ ] |
| b. Separated                     | [ ] | e. Divorced              | [ ] |
| c. Co-habiting /Consensual Union | [ ] | f. Single/ Never married | [ ] |

A.12 How long have you lived in this community? .....

A.13 Where were you born? (City and region)

.....  
.....

A.14 Where did you move from to Accra?

(Name).....

A.15 How long have you lived in this house/dwelling?

.....

A.16 What is the size of your Household?

- |          |     |           |       |
|----------|-----|-----------|-------|
| a. 1-2   | [ ] | d. 7 - 9  | [ ]   |
| b. 3 - 4 | [ ] | e. > 9    | [ ]   |
| c. 5- 6  | [ ] | f. others | ..... |

## **B. LIVELIHOOD OPPORTUNITIES AND WATER DELIVERY AND ACCESS IN COMMUNITY**

B1. Which of the following applies to you? (Circle all that apply)

1. I am unemployed and not looking for work
  2. I am unemployed and looking for work
  3. I work full time for wages
  4. I work part time for wages
  5. I work informally, or from time to time, odd jobs, and/or earn some money from selling goods (informal sector) I don't work but earn some money working for others from time to time
  6. I get a government grant /loan
- 
7. I study full time
  8. I study part time
  9. Other (specify): .....

B2. How much do you earn in a month (averagely if in informal sector/ Self-employed)

- |                   |     |                    |     |
|-------------------|-----|--------------------|-----|
| a. < Gh¢ 200      | [ ] | b. Gh¢ 200 - 500   | [ ] |
| c. Gh¢ 500 - 1000 | [ ] | d. Gh¢ 1000 - 1500 | [ ] |
| e. > Gh¢ 1500     | [ ] |                    |     |

B.3 Who pays for water for this household?.....

B4.What percentage of your income do you spend on water for drinking and household needs? **(If you (respondent) is not the one who pays for the water, move to B.4.1.)**

- |           |              |
|-----------|--------------|
| a. 1-10%  | c. 21-30%    |
| b. 11-20% | d. Above 30% |

B.4.1.How much would you guess is the % of income most families or the person who pays for your household's water pay?

- a. 1-10%
- b. 11-20%

- c. 21-30%
- d. Above 30%

B. 5 Rank in order of importance using 1, 2, 3, 4, 5 and 6, according to your monthly expenditure whereby '1' is the highest cost and '6' is the least cost.

a. Water	b. Electricity	c. Accommodation	d. Food	e. Entertainment	f. Cooking fuel

B.6 From which of the following sources does this household get its water? (Tick all that apply)

Source		Tick
1.	in-house connection	
2.	in-yard connection	
3.	Your own private water tank	
4.	public/communal/vendor water tank	
5.	public/communal/vendor standpipe or tap	
6.	Your own private borehole/well	
7.	public/communal/vendor borehole/well	
8.	bottled/sachet water	
9.	Other (specify):	

B.7 Among the list mentioned in B.6 above, which of them is your primary source of water?

.....

B.8 How often would you say your household buys water from a vendor?

- a. Every day
- b. At least once a week
- c. At least once a month
- d. Very occasionally
- e. Never uses water from vendors
- f. Others.....

B.9 What is the estimated total quantity of water (in gallons (Yellow Gallon) used by your household per day?

- a. Less than 3
- b. between 4 and 5
- c. Over 5 but less than 7
- d. Over 8 but less than 10
- e. Between 12 and 14
- f. More than 15

B.10 If you buy water from the public tap or vendors, how much do you pay per gallon (big yellow)?

.....

B.11 Who primarily fetches the water for this (your) household? (If the person says themselves, check the most relevant category that applies. e.g. if the person is an adult mother in the household, check Wife/Mother, etc).

Responsibility		Tick
1	The respondent	
2	Wife/Mother	
3	Daughter/Niece	
3	Husband/Father	
4	Son/Nephew	
5	Mother	
6	Father	
7	Neighbour/Friend	
8	Other (Specify):	

B.12 How many hours (per day) do you or the person stated in (B.12) spends in getting water?

.....  
 .....

B.13 Rank on a scale of 1-5, 1 being the highest and 5 the least, which of the following factors is more likely to determine a person's access to water?

a. Income	b. Size of Family	c. Type of property owned	d. Educational level	e. Participation in community meetings

B.14 If you lived in any other community apart from this one, do you think that your access to water would have been different?

- a. Yes
- b. No
- c. Maybe
- d. Don't know

B.14.a Please explain your answer in B.14 above

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

**C. SOCIAL NETWORKS AND COMMUNITY PARTICIPATION**

C.1 Please indicate which of the following groups you have been part of and role played

Types of Organization		Check	Role Played in The Group	Participation in water-related Issues (Check)
1	Religious Group			
2	Youth Group			
3	Work/Occupational			
4	Public Advocacy Group			
5	Unit Committee Member			
6	Local Political group			
7	Others (Specify).....			

C.2 If you have not participated in any groups that deal with water challenges, what is your reason?

- a. Don't have time [    ]
- b. I don't think it will yield any positive results [    ]
- c. Don't know if there are any such groups? [    ]
- d. Financial/labor burden [    ]
- e. other..... [    ]

C.3 Are there instances you know of where any group has supported its members to have access to water?

- a. Yes [    ]
- b. No [    ]

C.3.1 Please describe

.....

.....

.....

C.4 Are you able to rely on your church/mosque to provide you with water when there is shortage or you are not able to pay for water?

- a. Yes [    ]
- b. No [    ]

C.5. Are there any other community groups that provide support for water services in the community?

- a. Yes [            ]
- b. No [    ]

**D. COMMUNITY AND HOUSEHOLD CHARACTERISTICS**

D1. Which housing type do you live in?

- a. Compound
- b. Detached
- c. Semi-Detached
- d. Apartment
- e. Others.....

D.2 How many households live in this compound? .....

D.3 What is the nature of your tenancy arrangement?

- a. Landlord/landlady
- b. Rent
- a. Caretaker
- b. Free Co-habitation

D.4 If you chose option a. in D.3, do you own the parcel of land you live on?

- a. Yes
- b. No
- c. Don't know

D.5 Do you think land ownership affects access to water in this community?

- a. Yes
- b. No
- c. Don't know

D.5.1 If yes, please explain: \_\_\_\_\_

D.6 Would you say that the Housing units are in good conditions? (Materials used)

- a. Yes
- b. No

D.6.1 If no, what makes the condition unsuitable?

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

D.7. Is housing in this community affordable?

- a. Yes
- b. No

D.8 Which type of toilet do you use most often?

- a. Water closet
- b. Pit latrine
- c. bucket
- d. Public toilet
- e. Other

D.8.1 Is it located: (circle):

- a. In your house
- b. In your compound
- c. Outside/Communal

D.9 Do you use a public shower or household one (shared by a number of households or community)?

.....

D.10 How much do you pay per bath?

.....

D.11 Do you feel that your community (Indigenous (Ga-speaking)/ Migrant (many languages)) gives you any advantage of getting access to water?

- a. Yes
- b. No



D.23 Since you lived in this community, has water access improved or deteriorated?

.....  
 .....

D.24 What do you think accounts for this situation?

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

D.25 Are the water sources for this community changing?

a. Yes [ ]

b. No [ ]

D.26 If yes, can you describe?

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

D.27 Do you have more options to access water now compared to earlier times in this community?

a. Yes [ ]

b. No [ ]

D.28 What happens when the trucks that supply water to this household/community do not come?

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

D.29 What contribution have you made as an individual to help solve the water situation in your community? Please specify

.....

D.30 Rank in order of importance, on a scale of 1- 10, **in ascending order**, which are the most serious concerns in your community. (**10 being the most serious concern**)

Concerns		Rank
a.	Crime and safety	
b.	Water	
c.	Sanitation	
d.	Housing	
e.	Transport	
f.	Harassment	
g.	Unemployment	
h.	Education	
i.	Electricity	
j.	Disputes	

**E. TRADITIONAL/ LOCAL GOVERNANCE SYSTEM**

E.1 In the last assembly elections, did the issue of water form part of the campaign?

- a. Yes
- b. No [ ]

E.2 In the last general elections (presidential and parliamentary), did the issue of water become important in this community?

E.3 Do you think your elected committee level officials can do anything to solve the water needs of this community?

- a. Yes [ ]
- b. No [ ]

E.3b Explain your answer.

.....

E.4 Who do you think has more influence to advocate for the water needs of this community?

.....  
.....

E.5 Which of the problems faced in this community do you think should be the priority focus of leaders in this community?

.....  
.....

E.6 Can you say something about the role of traditional authority/leaders in particular in dealing with water or other community needs?

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

**F. VULNERABILITY AND COPING MECHANISMS**

F.1 Has there been any time that you experienced interruptions in water supply or when you did not get water to buy from vendors in your community?

- a. Yes [ ]
- b. No [ ]

F.1.1 What did you do at that time / in this state?

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

F.2 In times of economic hardship, which one of these needs listed below would you reduce spending on first. Rank on a scale of 1-5 in decreasing order, (where 1= 1st to reduce spending on) and 5 last to reduce spending

Needs		Rank
1	Water	
2	Electricity	
3	Food	
4	Transportation	
5	Sanitation	

F.3 Have there been changes (in your income at any point during the last five years?)

a. Yes [ ]

b. No [ ]

F.3.1 **It has:** a. Increased [ ]

b. Decreased [ ]

F.4 How did it influence your ability to get access to water or other basic needs?

.....  
 .....

F.5 In the absence of water supply from your regular sources or water providers, where do you get your water for use? (Select all that applies)

Source		Select
a	Travel to other communities	
b	Store water in my house	
c	Borehole	
d	I buy and use sachet water	
e	I get water from Neighbours	

F.6 Are there some people who are more vulnerable to water access in the community than others?

a. Yes

b. No

F.6.1 Who are they?

.....  
 .....

F.7 Why are they more vulnerable?

.....  
 .....

F.8 Do you reuse water? a. Yes [ ] b. No [ ]

F.9 What use do you put reuse water to?

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

F.9.1 What is your motivation for re-using water?

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

F.10 Do you use rainwater?

.....  
.....

F.11 Has rainwater supply increased or decreased over the past decade?

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

F.12 Are you and your household able to rely on other households when you need water?

F12b. If yes, how are these other households related to you?

a. relatives [ ] b. neighbors [ ] c. community members? [ ]

F.13 Do households share water in this compound?

a. Yes [ ] b. No [ ]

F.14. Are there any differences in how women and men get access to water?

.....  
.....

F.14.1 If yes, in what ways do women and men have different experiences regarding water access?

.....  
.....

**G. GOVERNMENT INTERVENTION AND OTHER STAKEHOLDER PARTICIPATION IN WATER GOVERNANCE**

G.1 Do you know of any form of government intervention to solve the water problems in your community?

a. Yes [ ] b. No [ ]

G.2 If yes, state what has been done.

.....

G.3 Has this intervention been successful?

a. Yes [ ] b. No [ ]

G.4 Give reason (s) for you answer in Q.G3.....

.....



H.7.1 If yes, can you tell me a bit more about that?

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

H.7.2 What about health affects including stress, worry, etc?

H.8 When I am unable to access water, I feel.....

H.9 The emotions I associate most with our households supply of water are...

.....  
.....

H.10 When you can't get for water for your household, please describe what happens.

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

H.10.1 If I couldn't get water, I would feel.....

.....  
.....

H.12 How does it affect you and your household when water is less available?

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

H.13 When the water is of poor quality I feel...

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

H.13.1 Could you describe an instance where you felt water was of poor quality?

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

H.14 If I were a leader in the community, regarding water issues, I would...

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

H.15 How does it affect your community as a whole when there is no water or when water is of poor quality?

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

**I. ACCESS TO ENERGY SOURCES**

I.1 What percentage of your income (monthly) do you spend on paying your electricity bills?

.....  
 ..  
 I1b. If not applicable to you, please estimate what you expect the average percentage for families would be?  
 .....

I.2What are the main sources of energy for your household and how much do you spend monthly on them? Select all that apply.

	SOURCES	TICK	Estimated monthly expenses
1	Batteries		
2	candles		
3	flashlights		
4	Grid electricity		
5	Liquid Fuels (i.e. gasoline, diesel for mopeds, scooters, cars, etc.)		
6	Charcoal		
7	fuel Gas		
8	Kerosene		
9	OTHERS		

I.3How often does the power (electricity) go out:

- a. Every day..... [    ]                      b. Every week..... [    ]  
 c. Every month..... [    ]

I.4Do you know any office that you can lodge a complaint or seek assistance should you have any difficulties linked to your supply of electricity?

- a. Yes                                      [    ]                      b. No                                      [    ]

**J. INTERVIEWER DETAILS**

<b>IJ1</b>	Name of Interviewer				
<b>J.2.</b>	Time interview started	.....		Time interview ended	.....
<b>J.3</b>	Respondent was...	Very cooperative	Somewhat cooperative	Somewhat not cooperative	Not cooperative at all

**Thank you for participating in this survey...**