# Exploring the influence of a community-based project on rural livelihood in Cameroon: The case of the Kumbo Water Authority project.

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A thesis submitted to the

Faculty of Graduate and Postdoctoral Studies

in partial fulfillment of the requirements for the

Doctorate in Philosophy degree in Population Health

Population Health of Interdisciplinary Health Sciences

Faculty of Health Sciences

University of Ottawa

**Abstract**

***Introduction:*** Potable water is vital for human existence, but scarce in certain areas.

***Purpose***: The research focused on exploring Kumbo potable water on the livelihood of the rural inhabitants of the Kumbo community in the Northwest Region of Cameroon. It also examined stakeholders' involvement in the project and the sustainability of the project.

***Methods:*** The research was a descriptive qualitative case study that used in-depth individual interviews, focus group discussions and document reviews as sources of data. 21 participants were involved and they included key informants, community leaders, households, focus groups, and staff of the Kumbo water project. Informant feedback or member checking was used to as a strategy to establish validity of data collected. The Nvivo software was used for data storage, management and to facilitate analysis.

***Results:*** The findings identified 4 major themes: participants' perspectives of accessibility of water provided by the project, stakeholders and their roles in the management of the project, social and economic factors influencing the livelihood of the Kumbo population and the sustainability of the project. Majority of the interviewed participants reported that the water project has increased the accessibility of potable water in the Kumbo community. However, stakeholders involved in the management of the project has changed over time since its inception (from the Department of Public Works, Department of Urban Development, National Water Supply Company of Cameroon (commonly known as SNEC- a French acronym), Nso Development Association (NSODA), and currently Kumbo Water Authority (KWA) and Nso Community Water). Besides the KWA and Nso Community Water currently involved in the management of the project, the Governor of the Northwest region, the Senior Divisional Officer of Bui division, the Paramount Chief of Kumbo, and the Mayor of the Kumbo Urban Council are stakeholders involved in this project. Nevertheless, all these stakeholders have undefined roles and they often make conflicting decisions on how the project should be managed. The undefined roles of these stakeholders compounded by climate change and population expulsion threatens the sustainability of this water project. These setbacks have reduced the quantity of water supplied by the project to the community; resulting in the rationing of water.

***Conclusion:*** The findings of this study have revealed that the inhabitants of the Kumbo community perceived that the water project provides accessible and clean water needed for their livelihood. Nonetheless, conflicts between stakeholders has led to the poor management of the project, and this can potentially lead to waterborne diseases in the community. To protect the health of the population, stakeholders need to come to a compromise on how to better manage this project. Also, multiple case studies of similar projects in and around the region may further highlight best practices of water governance and its benefit to rural communities in Cameroon.

**Acknowledgement**

Foremost, I would like to express my profound gratitude to my supervisor Prof. Sanni Yaya for the untiring support of my Ph.D. study. This research would not have been possible without his patience, motivation, and enormous knowledge. His expertise helped improved the research and writing of this thesis. I was blessed to have him as advisor and mentor for my Ph.D. study. Likewise, my gratitude goes to my thesis committee members for accepting to provide insightful clarifications and motivation for my thesis.

Not one person has been more important to me in the pursuit of my Ph.D. study than the members of my family. I would like to thank my parents Mr. Ambe Alfred K. of blessed memory and Mrs. Ambe Racheal Neh, who have been my guidance in whatever I pursued. They are my ultimate role models. Most importantly, I wish to thank my loving and supportive daughters Sharon and Elvira Fondoh who provided me with endless encouragement and support. To my sisters, brother, nieces, and nephews I say "Thank You" for endowing me with unfailing support and unceasing encouragement throughout my years of study. I remember my beloved son who is of blessed memory and who encouraged me to enroll in the Ph.D. program. I can still remember him say "mom you can do it". Adieu son!

I am grateful to all of those with whom I have had the pleasure to work during this study especially my Research Assistant Yannick Suh Ambe. I am also thankful to the studied participants of the Kumbo community for voluntarily participating in this research and the enormous information provided to me.

TO THE ALMIGHTY GOD, THANK YOU FOR MY LIFE

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## List of abbreviations

1. AFDB – Africa Development Bank
2. ANAFOR - Agence Nationale d'Appui au Developpement (National Forestry Development Agency).
3. CAD – Canadian Dollar
4. CEDAW – Convention on the Elimination of all Forms of Discrimination Against Women
5. CIDA Canadian International Agency
6. CPDM – Cameroon People Democratic Movement
7. CSCE – Canadian Society for Civil Engineering
8. CWSI – Canadian Water Sustainability index
9. DFATD – Department of Foreign Affairs, Trade and Development
10. FAO – Food and Agricultural Organisation
11. FCFA - Franc Communauté Financière Africaine
12. GWP – Global Water Partnership
13. HDI – Human Development Index
14. HIV/AIDS – Human Immune Virus/Acquired Immune Deficiency Syndrome
15. IFAD – International Fund for Agricultural Development
16. IMF – International Monetary Fund
17. KUC – Kumbo Urban Council
18. KWA – Kumbo Water Authority
19. MDG – Millennium Development Goals
20. MOU – Memorandum of Understanding
21. NGOs – Non-Governmental Organisations
22. NSODA – Nso Development and cultural Association
23. OECD – Organisation for Economic Cooperation and Development
24. SATOM - Société Anonymode Travaux d'Outre-Mer

25. SDF - Social Democratic Front
26. SDO – Senior Divisional Officer
27. SNEC – Société National des Eaux du Cameroun
28. SSA – Sub Saharan Africa
29. SWELA - South West Elite Association
30. ToC – Theory of Change
31. UN – United Nations
32. UNDESA – United Nations Department of Economic and Social Affairs
33. UNDP – United Nations Development Program
34. UNESCO – United Nations Education Scientific and Cultural Organisation
35. UNICEF – United Nations Children's Emergency Fund
36. UNW – United Nations Water
37. USAID – United States Agency for International Development
38. WCED – World Commission on Environmental and Development
39. WHO – World Health Organisation

## Definitions of operational terms

The following terms are defined to suit the context in which they are used in this study:

1) Potable water: it refers to water that is safe for drinking or for use in the preparation of food without the risk of health problems.
2) Stakeholders: A stakeholder is "a person or an organization actively involved in the project or having an interest in or conflict of interest with the project execution or the project end result" (Youcef, et al., 2015, p. 1). It also refers to individuals or groups that have an interest in the success and progression of a company (Kimberlee, 2018). In the context of this study, they are those individuals or groups that are working for the success and progress of the Kumbo water project (community members, Kumbo Urban Council, Cameroon government, Canadian government and the Palace).
3) Sustainability: this is "development that meets the needs of the present without compromising the ability of the future generations to meet their own needs" (WCED, 87, p.43).
4) Governance: this refers to "structures and processes that are designed to ensure accountability, transparency, responsiveness, rule of law, stability, equity and inclusiveness, empowerment, and broad-based participation" (UNESCO, 2017).

# Chapter 1: Introduction

## 1.1 Background

Lack of access to potable water is a major public health issue globally (Nayebare et al., 2014). A poor water supply impacts the health of a population by causing acute infectious diarrhea, repeat or chronic diarrhea episodes, and non-diarrheal disease (arising from chemical species such as arsenic and fluoride), all of which affects population health by limiting people's productivity and their maintenance of personal hygiene (Hunter et al., 2010). Despite clear evidence that providing safer, accessible and more reliable supplies of fresh water leads to healthier populations and economies, millions of people globally still struggle to access safe drinking water and more than 840,000 people die each year from poor water, sanitation and hygiene (Geere, 2016). For several decades in developing countries, almost one billion people lack access to potable water (Hunter et al., 2010). Countries in sub-Saharan Africa including Cameroon equally face this problem of lack of potable water for its population.

Although Cameroon has plenty of freshwater, only an estimated 67.1% of the population has access to potable water (Pullan et al., 2014). Cameroon trails other sub-Saharan countries in providing access to both potable water and sanitation, except in urban areas (World Bank, 2011). Access there is 88%, compared to only 47% in rural areas; however, the peri-urban areas have even less access to potable water (Ako et al. 2010). Even though clean drinking water is a basic necessity of life, a greater part of the population relies on contaminated sources such as wells, rivers, and lakes – that was the case for the people living in the city of Kumbo, located in the North West Region of Cameroon before the inception of the Kumbo water project (details regarding Kumbo in chapter 3).

The Kumbo water project was first initiated in the late 1960s using community labour and financial contributions. This project went operational in 1972; but in 1991 the towns people "expelled the national water corporation that had managed the water project for some time, from the town by force," claiming "to be retrieving a network that the community rightfully owned (Page, 2003). In the present day, there are contrasting views on the true ownership of the project (Njoh, 2006), which has "ended up with complex ownership claim" (GWP, 2015, p. 1). Proponents of local rights claim that the project is a

community initiative finally accomplished in 1964 with Canadian financial support. Others claim that the project was always a government-owned scheme, created in accordance with the national law relating to water supply; and the diplomatic role played by the Cameroon government that enabled the project to secure funds from the Canadian government.

According to Global Water Partnership (2015b), the community struggles since 1964 with the management of its municipal water supply system. The Kumbo community and the municipal water management struggled over the use of the Kumbo water catchment area. This struggle led to the expulsion of people farming around the catchment area. Denham (2011) explains that the catchment area had been neglected for over four decades, with farmers encroaching on it to cultivate and graze cattle and goats. They also planted eucalyptus trees to use for fuel and for construction. The consequences of these actions in this area were to reduce twenty natural sources of water to fourteen; and not only was the volume reduced, the remainder also carried a lot of silt and chemicals (from fertilisers used by farmers). This expulsion of the people brought about a court case over the control of the catchment area which jeopardised the Kumbo's water supply, leading to the decision to expel the farmers. It brought animosity in the community as "tensions were very high between the farmers who are mostly women involved in subsistence farming and Kumbo Water Authority" (Denham 2011, p. 12).

In 2009 a three-year project began, sponsored by the Canadian government. The Government of Canada provided $306,013 in financial support (Government of Canada, 2018), with the goal of providing water to 60,000 people. Since the inception of the Kumbo water project, few studies have attempted to research its significance to the Kumbo population affected. A gap currently exists in exploring the perceptions of the community members on the influence the water scheme has had on their livelihood. Meanwhile, aid organisations and foundations expect development experts to research, teach and share their experiences about what does and does not genuinely benefit the communities concerned. This failure to acknowledge beneficiaries, who are vital sources of information, denies other experts the opportunity to understand their living conditions, and the parameters that define project effectiveness for them (Twersky et al., 2013). Threlfall (2011) also indicated that it was important for aid policymakers to

understand beneficiaries' viewpoints, since their opinions “are often overlooked and underappreciated, even though they are an invaluable source of insight into a program's effectiveness" (Twersky et al., 2013, p. 1). A significant amount of money and efforts were invested in this project, and many studies of its efficacy were conducted; but as indicated earlier, little is known about the point of view of the beneficiaries who struggled for over four decades with a problematic water delivery service that limited their access to potable water. We are unaware of any empirical studies that examined their experiences.

The Kumbo water project is a critical element for Cameroon’s attainment of its Millennium Development Goal (MDG) – a suite of eight targets set out by the United Nations (UN) in 2000, aimed at meeting the needs of the world’s poorest peoples. One of such targets is to halve the proportion of the population with no access to potable water (Ako et al., 2010). Access to potable water is also a key element of the Sustainable Development Goals as “United Nations recognized ensuring water security as one (Goal 6) of the seventeen sustainable development goals (SDGs)” (Gain et al., 2016, p. 1). Although the United Nations Educational Childrens’ Emergency Fund (UNICEF) and the World Health Organisation (WHO) celebrated the achievement of the MDG target of halving the proportion of the population with no access to potable water in other countries, Cameroon lagged behind: there were still too many communities with limited drinkable water (Fung, 2013).

One of the results of this lack of clean water is the continued burden of waterborne diseases. In 2011, Cameroon registered 22 433 cases of cholera, including 783 deaths - one of the highest levels in Africa (WHO, 2012). In poor regions, drinking contaminated water – polluted by the fecal residues of infected individuals – exposes people to infection by a host of bacterial and parasitic diseases, from cholera to amoebic dysentery, typhoid fever and hepatitis A.

Deaths from water-borne diseases are generally the outcome of dehydration from loss of electrolytes through vomiting or diarrhea (Fonyuy, 2014; Ako et al., 2009; Awah et al., 2013). Public health experts acknowledged that “cholera remains a public health concern particularly in developing countries with lack or inadequate supply of potable water, poor hygiene and rudimentary sanitary

facilities" (Akoachere & Mbuntcha 2014, p. 2; Ndah & Ngoran, 2015). The spread of diarrheal diseases is enabled by behavioral, social and environmental influences (Khanal, Bhandari, & Karkee, 2013).

Different ages in a population are more susceptible to specific diseases. Children under 5 years old are more susceptible to diarrhea, gastroenteritis, amoebic dysentery, while the population between 15-44 are most susceptible to typhoid and cholera (Ako et al, 2009). In Cameroon, 60% of diarrhoeal diseases among children are caused by drinking contaminated water (Ntouda et al., 2013). The other major African diseases - HIV/AIDS, tuberculosis, and malaria, usually characterized as "the big three", are less of a risk for children than diarrhoeal diseases (Bartram & Cairncross, 2010). Yet, "primary prevention of infectious diseases is still difficult to achieve particularly for children in poor families who are continuously exposed to health risks and other hazards typical in poor communities" (Kahabuka, et al., 2012, p. 2). Though dirty water is not the sole cause of fatal diarrhea in Cameroon's children, some researchers have pointed out that many children die because their "caregivers have incomplete knowledge and information about managing diarrhea and other childhood health concerns" (Chaponniere & Cherup, 2013, p. 1). However, Mukabutera et al., (2016) believed that there is a link between rainwater and diarrhea.

In the Northwest province of Cameroon, only 44% of the population had access to clean water in 2004 (WHO, 2006). The rest of the province's 1.2 million people consume contaminated water and were infected with waterborne diseases. Some researchers argued that the challenge of providing clean water to any fast-growing urban population is always exacerbated by a number of factors: the lack of skills to manage and develop water resources, the political will and commitment, and the regulative and legislative environment (Ako et al., 2010). Others assert that a rapid increase in population is invariable "in disequilibrium with available resources" (Ngoran, & Ngoran, 2015, p. 56).

This burden of diseases is exacerbated by the inadequate finances earmarked for health in the country, and by the shortage of healthcare personnel. Cameroon's ratio of doctors to patient is 1.9 per 1000 people – only half the ratio set by WHO (World Bank, 2016). This fact is likely not unconnected to the fact that life expectancy for Cameroonians was down in 2016, while some sub-Saharan African countries are experiencing increases – even though Cameroon's health budget is higher than other sub-

Saharan African countries. Also, the country's neonatal death rates (122 deaths per 1,000 live births) is only marginally reduced from its previous levels (World, Bank, 2016). The most impoverished areas had even less spending on health than the rest of the country (World, Bank, 2013, p. 1).

After the conclusion of the Kumbo water project in 1972, Kumbo was one of the communities privileged to have clean water. However, in the intervening years, the project infrastructure has suffered from frequent conflicts and struggles for ownership.

**1.2 The socio-economic situation**

Cameroon's population and urbanisation are definitely growing. In 2016, the population was approximately 23.3 million, which is significantly increased from the 2002 population census of 17.4 million (World Population Review, 2016). This positioned Cameroon 54th globally in terms of population growth. With a massive population increase, the urbanisation rate presently is 3.3%, which means 58% of the population lives in urban areas and the rate increases yearly (World Population Review, 2016). In 2009, Ako et al., observed that out of the 300 urban areas, with a population of at least 5000 people, just 98 urban areas have access to clean water systems. This underinvestment in infrastructure "not only impinges on the daily lives of millions, it also renders firms less competitive as productivity, transaction costs, and output quality are adversely affected" (Lin & Doemeland, 2012, p. 13).

In 2010, International Monetary Fund (IMF) reported that poverty had decreased in urban areas, especially in Yaounde and Douala by five points; while in the rural areas, poverty is still pervasive with an increase of three points. That is validated, as one microeconomic cause of poverty is the marginalisation of some fragments of the population and especially when poverty was linked "to household size, the level of education, the socio-economic group and access to means of production" (IMF, 2010, p. 15).

Cameroon is gifted with important natural resources such as oil and gas, timber, minerals, and agricultural products including coffee, cotton, cocoa, maize, and cassava (World Bank, 2016). In addition to natural resources, Cameroon is blessed with freshwater reserves. Paradoxically, Cameroon "does not transform this into sustainable economic growth or poverty reduction" (World Bank, 2010, p. 10).

The agricultural sector in Cameroon produces more than half of the country's non-oil export proceeds and also engages about 60% of the population. About 90% of households in the rural areas are engaged in agriculture, and an estimated 1/3 relies on export crops for their subsistence (World Bank, 2013). Agriculture is consequently a significant asset for socio-economic development and requires the need for much water (World Bank, 2013).

Even though Cameroon has made attempts at improving access to basic social services, these attempts are not enough as the Human Development Index (HDI) status is 150th out of the 179 states that were registered in 2008 (Africa Development Bank (AFDB), 2009). Based on this fact, the country experienced an increase in the number of poor population from 2007 to 2014 by 12%. Comparatively to other regions, there is more poverty in the North and Far North regions of Cameroon with approximately 56% of the province's poor residing there (African Economic Outlook, 2016). The major cost of the healthcare is paid by the Cameroonians as out of $61 per patient, the state pays $17, and $8 is paid by international donors (World Bank, 2013).

According to AFDB/OECD (Organisation for Economic Cooperation and Development) (2007), the health performance is encouragingly comparative to other countries in sub-Saharan Africa. In 2006, the government health expenditure was estimated to be about 5.8% of the total budget. However, the shortage of health personnel is a long-standing problem. Cameroon has "18.4 physicians per 100,000 inhabitants compared to an average of 39.6 physicians per 100,000 for Africa" (AFDB, 2009, p. 6).

The traditional political structure consists of "male chiefs who rule over a village, tribe, or region, assisted by several family members—sometimes including a Queen Mother. Secret societies made up of males control power and military societies, or vigilante groups" (Global Science Initiative, 2009). The absence of women in important positions along the political ladder at the village level constitutes just one part of discrimination against women in rural settings.

For many years, Cameroon has superficially attempted to enhance women's rights throughout the country by supporting important global conventions, such as the Convention on the Elimination of all Forms of Discrimination Against Women (CEDAW) and the Beijing Declaration Platform for Action.

However, women still experience social, economic, and political disparity, particularly in rural areas (Montemarano, 2011).

Weak governance in Cameroon is deeply rooted and affects the state's development efforts and its capacity to entice investors. This weak governance extends to rural community projects like the Kumbo water project. Corruption "impedes the development of markets, drives away investments, increases the costs of doing business and undermines the rule of law" (Batz, 2011, p. 1). In 2015, Transparency International placed Cameroon in the 130th position out of the 168 most corrupt countries in the world (World Bank, 2016).

**1.3 Politics**

In 1960, the French part of Cameroon gained independence from France, while the English region gained independence in 1961 from Britain. The two regions became the Federal Republic of Cameroon and were renamed The Republic of Cameroon in 1984 (Cameroon High Commission, 2008). Since acquiring independence, the country has been ruled by two Presidents (Commonwealth, 2016).

In 1966, Cameroon started with a one-party system, and in 1990, there was an upsurge of political frustration among Cameroonians regarding what they perceived as autocratic rule by the administration. This frustration resulted in political upheavals and the birth of multiparty politics.

In 1992, an election was conducted and President Paul Biya was confirmed in what seemed to be a multiparty race; notwithstanding severe undemocratic and anti-media laws enacted prior to the election (Global Conscience Initiative, 2016). Also, political upheavals have been the order of the day for over three decades. Instability in the country has created widespread corruption, Anglophone-Francophone conflict, and President Biya's extended power possession (Global Conscience Initiative, 2016).

The various historical, ecological, social, and economic backgrounds of Cameroon, including the fast-growing urban areas and population, demand an in-depth examination of the social and economic significance of supplying clean water to the people of Kumbo. Literature has revealed that the macroeconomic growth Cameroon has enjoyed is not reflected in a sustainable manner in the livelihoods of the people in Kumbo. Counting from the colonial period to the present, for over five decades, two

Presidents and their dictatorial governments have only accentuated the interest of a small group of people over the majority of the population. This is reflected in the persistent poverty that prevails in Kumbo and the insufficient investment in infrastructure that is trailing population growth and urbanisation.

### 1.4 **Research Rationale**

This study was inspired by an ineffective water delivery service that is marred by conflicts since 1972. Over the years, donors have increased donations to development programs in developing countries with the aim of improving their living conditions. Many communities have also initiated donor dependent programs/projects and it is expected that these programs/projects will sustainably raise the social and economic well-being of the communities. Nonetheless, globally, development aid is increasingly being criticised for not realising real influence on the target beneficiaries of projects and programs. The Kumbo water project in Cameroon received aid aimed at improving the living conditions of the population (Government of Canada, 2018). There was need to explore the knowledge gap on the influence of the water project on the livelihood of the beneficiaries.

### **1.5 Research questions and objectives**

When aid organisations make donations to programs and projects in developing countries, their overarching purpose is to improve the living conditions for the people in affected communities and to sustainably raise their health and economic well-being. Accordingly, in examining the Kumbo water project this research started to answer:

- What is the impact of the Kumbo water project on the social and economic well-being of the Kumbo population?

Subsidiary questions include:

- What is the role of the stakeholders in the Kumbo water project?
- What are the factors influencing sustainability of the Kumbo Water project?

Accordingly, this research draws on the experiences of 21 members of the Kumbo community, along with key stakeholders to address the following research objectives:

- Describe the impact of the Kumbo water project on the welfare of the local community

- Define the role of community stakeholders in the water project
- Identify factors influencing the sustainability of the water project.

This research questions and objectives will be addressed using a qualitative case study research approach.

**1.6 Significance of the study**

Water is critical in strengthening a population's health; serious health and social problems concentrate in areas where the quality of water is poor (Tao and Xin, 2014). While people in developing countries or low-income settings suffer limited water accessibility related health issues, globally, people of high income regions within nations enjoy the health benefits of vast, reliably maintained infrastructure and water management systems that pipe safe, clean water into people's homes for drinking, cooking, washing and flushing their waste into sewerage systems (Geere, 2016). Geere 2016, also stated that in high-income regions, people no longer have the responsibility of maintaining their own supply of safe water or collecting water from a shared source outside of their own house. Instead, people are billed, with variable levels of efficiency and cost recovery, for water services provided by government or private utility companies. The Kumbo water project is an example of a project in a rural area that could provide water of comparable quality to that offered in high-income settings but nothing, however, was known about its impact in the welfare of the Kumbo population.

In 2009, the WHO indicated that Cameroon has the world's highest rate of diarrhoea diseases with 68,600 deaths per year. In 2014, Pullan et al. reported that Cameroon had not attained the MDGs set forth by the United Nations in 2000. With the phasing out of the Millennium Development Goals and the beginning of the Sustainable Development Goals, it is unlikely that the government of Cameroon will be motivated to pursue the UN's recommendation for countries to provide potable water to their populations. The reasons documented for the limited progress towards universal access to an adequate water supply include high population growth rates in developing countries, insufficient rates of capital investment, difficulties in appropriately developing local water resources, and the ineffectiveness of institutions mandated to manage water supplies in urban areas or to support community management in rural areas (Hunter et al., 2010). The Kumbo community definitely has increased in population more than when its

water project was created and stakeholders managing its water project are certainly struggling to meet the needs of the growing population. However, the roles of the various stakeholders involved in the project were not known or documented anywhere.

Also, it has been documented that financial commitment (by stakeholders in a water project) alone does not sustain water projects nor solve water crisis. Other factors such as poor infrastructure investment, lack of binding regulations on water quality, lack of support for household water systems, worsening conditions of source of water, and lack of capacity and support for water operators are some factors that can hamper the sustainability of a water project (Avenue et al., 2016). An understanding of factors that could threaten the sustainability of a project like the Kumbo water project is very vital in the development of policies to sustain the project. However, the community's perspective on the factors influencing the sustainability of this water project have never been assessed before this study.

Therefore, considering that water is an important element vital for the health of any population, and knowing that developing better policies and interventions to improve on the implementation of water projects requires information about the project, it was necessary to research on the communities' perspectives about the Kumbo water project, the role of the stakeholders involved in the project and the factors influencing the sustainability of the project. This is also in line with Twersky et al. (2013), who recognised the need for non-profit organisations and foundations to include the views of communities in development activities, as that produces the most effective outcomes.

This thesis adds to the body of knowledge of clean water supply to rural communities, providing empirical data on the issues affecting the Kumbo water governance. It is hoped that this information will assist decision makers in creating policies and programs that will genuinely improve the management of the Kumbo water project and the health of the Kumbo population. We also hope that this study may serve as a useful resource for other interested parties such as NGOs, academics, and the donor community.

**1.7 Locating the researcher**

My own interest in this topic emerged while I was working as the National Specialist for Gender for the German Development Service (Deutscher Entwicklungsdients) in Cameroon from 2000 to 2002.

One of my responsibilities was to identify and help to address the needs of the population. I quickly realised that the most important need, particularly for women in Kumbo, was the consistent provision of potable water. While I was working in the area, I experienced frequent interruptions in the water supply, which I learnt resulted from politics, conflicts at various levels, and management problems. In 1991 the National Water Corporation was forced out of Kumbo, and the community took control of managing the project, which they believed they owned. However, they were unable to keep up their management, as a result of continued internal conflicts, and of financial constraint. The result of this struggle for control of community water not only reduced efficiency in supply services but also social, economic and political instability.

Furthermore, I witnessed how the frequent interruptions of water supply brought suffering to the population, especially the women and children. Reflecting on what I could do to help resolve the problem, in 2013 to 2016 I decided to examine the community experience of the Kumbo water project from the perspective of the people.

# Chapter 2: Literature Review

In this chapter, I discuss the current research on freshwater reviewing from a wide range of information sources, not merely those from academic publications. I developed the search strategy in consultation with a librarian at the University of Ottawa. Databases used include Global Health, PubMed, and the Cochrane databases of systemic reviews. Criteria for inclusion included published articles and books, governments, and organisations websites. I also made great use of Google, Google Scholar and the websites of multilateral and bilateral development organisations. The chapter discusses four main concepts: water, water conflicts, poverty, and sustainability. It also presents theories, empirical data, and a conceptual framework.

## 2.1 Theoretical review

This section elaborates the theories that directed my research, from its initiation, through the process of data collection, and to the final analysis. Since water issues tend to be convoluted, with multidimensional influences on a community, I choose to situate the study within three theoretical perspectives. These are Maslow's Hierarchy of Needs; Theory of Change; and Sustainability Theory. Each approach is described below.

### 2.1.1 Maslow hierarchy of needs theory

In his classic 1943 study of motivation, Abraham Maslow's posited a scale made up of five levels of essential physiological and psychological needs.

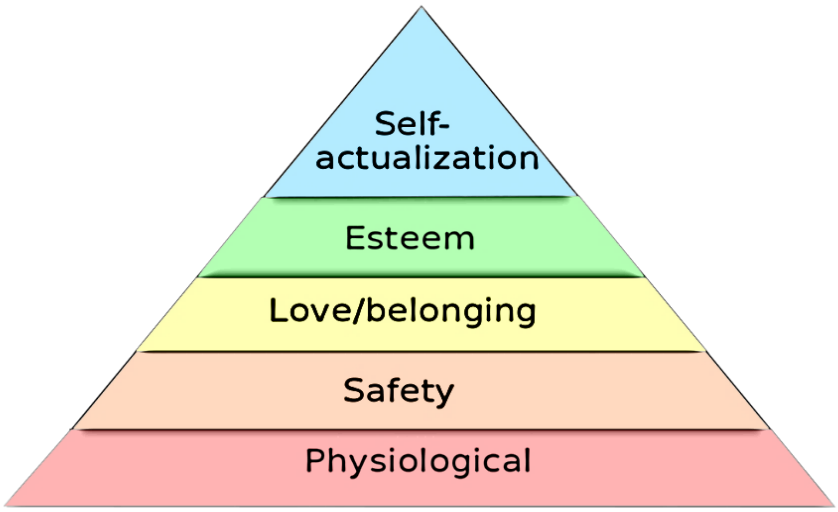


Figure 1: Maslow's hierarchy of need.

Source: Maslow (1954)

The most basic needs are those such as food, water, clothing, and shelter. Once these needs are met, the next most important is the need for safety; a sense of security, protection from danger, and freedom from fear. Higher up the motivational scale are the social needs which reflect people's needs for love, affiliation, and acceptance by the community. Building on that acceptance is a person's need for esteem -that is, recognition by others. The highest level is self-actualisation, which embodies the need for achievement, recognition, and status (Ozguner & Ozguner, 2014).

Maslow (1943) suggested that the first four stages are deficiency or "deprivation needs," which are a driving force for human beings; and that the urge to satisfy these needs becomes stronger as time progresses. According to Maslow's theory, the fundamental needs of survival must be met before a person can address a higher-level need of personal development (McLeod, 2016). The lower four levels of needs are necessary for people to survive without risking their self-esteem and health (Mukuhlani & Nyamupingidza, 2014). Once those are fulfilled, individuals may reach the highest stage, self actualisation.

Although Mawere et al. (2016) criticised Maslow's theory as lacking empirical evidence, and the application of the theory in other environments, such as those of Africa. In the 1970s, the World Bank recognised Maslow's theory acknowledging that economic growth alone cannot alleviate poverty at a

reasonable level (Streeten, 1979). The organisation adopted the basic needs approach with the aim of offering opportunities for more holistic development. This approach "focuses on mobilizing particular resources for particular groups, identified as deficient in these resources and concentrates on the nature of what is provided rather than on income" (Streeten, 1979, p.136). The new focus was on fulfilling immediate and basic needs rather than a long-term increase in economic growth (UNESCO, 1987).

This theory is relevant to my study because problems with the water supply infringe on the rights of the community to attain one of their most basic needs: physical health. At the high levels exposure to waterborne diseases also affect the quality of education for children, leading to economic consequences, political instability, conflicts and gender disparity. Therefore, water is a fundamental need that is necessary to fulfill other needs.

### 2.1.2. Theory of Change

A Theory of Change (ToC) is used to effect change. It is a type of methodology that "applies critical thinking to the design, implementation, and evaluation of initiatives envisioned to create social change" (The Child and Youth Network, 2015, p. 5). Out of TOC grew other planning models, such as the logical framework approach, that was developed from the 1970s onwards (Vogel, 2012). ToC generally offers a detailed explanation and demonstration of how and why an anticipated change is envisaged to occur in a specific context (Connell, Kubish, & Weiss, 1995). It describes all activities or interventions necessary to bring about the desired outcomes or long-term goals, focusing on mapping out the "missing middle" between the interventions and their proposed changes (Center for Theory of Change, 2016).

In the 1990s, the concept of ToC evolved with the perspective of enhancing evaluation techniques and practice in community programs (Weiss, 1997). This development resulted from issues of development and social programme methods (Vogel, 2012). Two perspectives came out of this development. From the standpoint of evaluation, "ToC is part of broader program analysis or program theory" (Stein & Valters, 2012, p. 3). From the development perspective, "it grew out of the tradition of

logic planning models such as the logical framework approach developed from the 1970s onwards" (Stein & Valters, 2012, p. 3).

Recently, various authors have developed different definitions of the ToC concept. Harris (2016) defined ToC as a tool for developing solutions to complex social problems. Brown (2016) defined it simply as an outcome framework or logical framework, sometimes expounded by assumptions, which are anticipated to provide the theory. Stein and Valters (2012) understood the ToC as “a less formal, often implicit, use as a way of thinking about how a project is expected to work” (p. 5). These overlapping definitions dwell on the fact that ToC approach is important and works well on the foundations of development programs. It explains how program planners analyse the relationship between inputs and outcomes, and how programs are planned to work, to improve evaluations and programme implementation (Funnell & Rogers, 2011). This approach allows for detailed planning of how activities are interconnected to a clear understanding of how change really happens (Center for Theory of Change, 2016).

ToC is applied in this study to enhance critical thinking of changes brought by the KWA project to the Kumbo community. The KWA is a project designed to improve the health of the population but it faces inherent complex water problems. According to Breue, Lee, De Silva, and Lund, (2016), "most public health interventions are inherently complex, with multiple interacting components, delivered at multiple levels” (p. 1). Breue et al. (2016) drew attention to the fact that a public health program is a process and progress is achieved through understanding the implementation of the program. Therefore, some researchers have suggested that appreciating the public health intervention’s triggering ToC and its complexities may enhance appraisal of complicated health programs (Ling, 2012). Hence, understanding what changes and how changes have been achieved by the KWA project beneficiaries are the basis of this research.

### 2.1.3. Sustainability theory

The concept of sustainability came into the limelight in the 1987 report of the World Commission on Environment and Development (WCED), - Our Common Future. Sustainability was defined in this

report as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED 1987, p. 43). This definition is based on the premise that since the environment is the foundation of every economic activity, and of life itself, "it is surely only right that the quality and integrity of the environment be maintained for future generations" (Starkey & Walford, 2001, p. xix). Superficially, sustainability simply means continuing development for a long period of time (Elliott, 2006).

Starkey and Walford (2001) noted that sustainability is grounded on three pillars; environment, society and economy and behind the seeming simplicity of the concept, there is a moral notion. The global perception of sustainability is now known to encompass multifaceted interrelationships between environmental, social and economic development (Potter et al., 2004; UN, 2013).

Opponents opined that the goals of sustainability articulated are multifaceted, eliciting questions on how to assess objectives and success or failure (Harris, 2003). Others thought that sustainability has been re-defined several times and has included so many components of society and environment that raised doubts as to whether a good conclusion can come out of it (Mawhinney, 2002). Proponents affirmed that sustainable development is a notion that is important particularly where it is disputed, necessitates discussions and agreement, and questions researchers and policy-makers (McNeill, 2000).

This study addresses sustainability at various levels, a water project in the context of environmental sustainability and from organizational perspective, and sustainability after the end of foreign assistance. It is relevant to this study because water is fundamental to sustainable development; it is crucial in socio-economic development, good environment and for human existence. Good governance of water resources helps in mitigating water-borne disease; improve health and output of the population. Water is at the basis of human existence and it is sustainable if well managed.

### 2.1.4 Relationship of theories to the study

These theories are all interwoven and interlinked and are engrained in this study to better comprehend the perspectives of the Kumbo community on water governance for the social and economic development of the population. Water scarcity issues are increasing. As the population grows there is

increasing pressure on the limited water supply, and the cost and effort to expand and maintain access to water increases. The importance of water to the political and social stability will increase with the crisis. Maslow basic need theory, for example, enables critique, awareness, dialogue, and discussions on benefits and barriers of water projects for social and economic development. The restrictive and alienating barriers, when exposed and alleviated will highlight the socio-political situation of the water project. It will help to empower community members for active involvement in projects bringing about change and sustainability. Water is a basic need and it is felt across all areas of social and economic livelihood. Communities and development partners strive to satisfy this basic need with the view that it will improve the health of the population and bring about the social and economic growth and, therefore, sustainability.

### 2.2. Empirical review

This section reviews literature from journals, dissertations, government reports, books, and conference papers.

#### 2.2.1. Global discourse on water

Water is an important natural resource for sustaining individual needs and is essential to the survival of life on earth. This may be why the right to water has gradually been acknowledged globally as an essential and absolute right of an individual and various countries are expected to endorse and apply this right in their internal laws in collaboration with the global community (Tamasang, 2007). The economic and social right to water means that "everyone without discrimination must have access to water in quality and quantity sufficient to meet his/her basic needs" (Tamasang, 2007, p.3). However, water reserves are inadequate and disproportionately distributed in time and space and the world is facing many problems in relation to it (Taye et al., 2016). Although the world recognises the significance of the right to water, part of the population in Cameroon is still robbed of this right. Access to clean water continues to be difficult in the rural areas especially in the deprived population with women and children bearing the greatest burden (Tamasang, 2007). However, the Universal Declaration of Human Rights (1948) acknowledged a comprehensive breadth of social, economic and civil rights which are currently intricately associated with the right to water (UN, 1948).

The recognition of the right to freshwater brought about the global discourse on the significance of water - both freshwater and wastewater – only in the last few years (Hari, 2016). It is necessary to underscore that this discourse has resulted in the initiations of global summits, agreements, and standards that have holistically described the problems and environmental practices related to water. Consequently, at the global level, conventions, treaties, protocols and covenants of the right to water and sanitation are stated either directly or indirectly in water policy documents of various nations (Hari, 2016).

### 2.2.2. Global conventions

In the 1970s, the UN started paying attention to water issues probably because of water shortages and the environment (Rahaman & Varis, 2005). To this effect, many conferences were held in the past decades to discuss issues surrounding access to clean water for all. At the end of the 1970s issues related to water resources, and drinking water specifically, caught the attention of the international community (Prasad, 2007). This decade promised universal water coverage by 1990. This goal was not achieved at the end of this decade owing to the debt crisis that plagued developing countries. The drawback of this decade called for an evaluation of the decade for water and a search for the way forward for global action. This resulted in the Global Consultation on Safe Water and Sanitation for the 1990s, held in New Delhi (Nicol, Mehta, & Allouche, 2012). This consultation ratified the principle of supplying clean water in a sustainable way, access to plenty of potable water and appropriate sanitation for all (Hari, 2016). This consultation also stressed water for the "some for all rather than more for some" approach (Nicol, et al., 2012).

In 1992, the UN Conference on Environment and Development, in the Rio Summit Chapter 18 of Agenda 21 recognized the Resolution of the Mar del Plata Water Conference that all peoples have the right to access clean water, and called this the commonly agreed premise (Tamasang, 2007). In the same year, a declaration was adopted in Dublin at the end of the International Conference on Water and Sustainable Development to underscore the right to water as the cornerstone of development (Tamasang, 2007).

In 1994 UN International Conference on Population and Development held in Cairo emphasized the right to water to all human beings (UN, 2014). The Second World Water Forum and Ministerial Conference in The Hague, March 2000, highlighted the importance of participatory and effective water management (The Prince of Orange & Rijsberman, 2000).

Furthermore, the World Summit on Water and Sustainable Development that took place in Johannesburg in 2002 declared in the Johannesburg Declaration and Plan of Action that the most important challenge to the world currently is the right of access to water and that governments all over the globe should take the necessary steps to make certain that this right is accessible to all citizens (UN, 2002). All these conferences and consultations established the right to water as an inalienable right.

Additional debates, conferences, and summits have been organised after the Johannesburg summit in 2002 to enhance cooperation and progress in the area of clean water. These include: (i) the Water for Life decade from 2005 – 2015; (ii) the Human Right to Water by the declaration A/RES/64/292 in 2010, (iii) the International Year of Water Cooperation in 2013; and (iv) the current consultation process to elaborate a post 2015 agenda (UN Department of Economic and Social Affairs, 2013). The UN Water for Life Decade that started in 2005-2015 was aimed at encouraging the implementation of international commitments in the water sphere by 2015, by providing a synopsis of water on the international agenda and calling global attention to the achievements of those implementing water programs and projects. This decade was also aimed at encouraging collaboration between various governments, stakeholders, communities, and economic interest groups to sustain the ecosystem and involve women in water and sanitation programs (UNDESA, 2015).

In 2010, the UN General Assembly, through Resolution 64/292, agreed that potable water and sanitation are crucial to the fulfillment of all human rights. The resolution appealed to states and international organisations to provide funding, enable capacity building and handover technology in resource-poor countries to assist in providing potable and affordable water and sanitation to all (UNDESA, 2014).

Cameroon has rectified these global conferences mentioned above and has been a signatory to the legal instruments indicating the government's commitment to ensuring a peaceful enjoyment of the right to water. In many cases, these agreements have not been respected. It is important to underscore that, the implementation of the principles of these conventions usually are not obligatory in international laws, which means that states are not obliged to meet the terms or implement them (Hunter et al., 1998). The implementation of international legal instruments is usually; subject to the political will of the countries involve (Hunter et al. 1998). Although water has not been established as a separate human right in international treaties, international human rights law requires certain responsibilities linked to access to safe drinking water from various states. These obligations require states to make sure everyone has access to a satisfactory quantity of clean water for personal and household consumption (UN, 2010).

All these conferences and work done during the United Nations Water for Life decade recognised the importance of water to life. However, “progress towards Target 7c of the Millennium Development Goals (MDG) – halving by 2015 the proportion of people without sustainable access to safe drinking water and improved sanitation facilities – remains slow” (Salami, Stampinib, Kamarac, Sullivand, & Namarae, 2014, p. 297). As such, 884 million people worldwide do not have access to quality drinking water and “if the trend continues as currently projected, an additional billion people who should have benefitted from MDG progress on sanitation will be alienated, and by 2015 there will be 2.7 billion people without access to basic sanitation” (Verhoeven, Uyetwaal, & Harpe, 2011, p. 23). Making available safe drinking water and sanitation protect infants and children from the undesirable health effects related to diarrheal disease (Botting et al., 2010).

Tatlock (2011) described worldwide research accomplished by the UN which indicated that 80 % of diseases and 30 % of deaths in developing countries are caused by polluted water. In Africa, the situation is worse as water scarcity comes with a lot of consequences for development. Freshwater is inadequate as out of an estimated 800 million who live in African, more than 300 million live in water-scarce environments (Economic Commission for Africa, 2006). With unprotected water reserves usually far from the villages, community members spend many hours to walk to the streams to fetch water. The

standard vessel used to fetch water in Africa, the jerry can, weighs over 40 pounds when filled to the top (Water Project 2016).

The significance of water for socio-economic development is well-recognised globally, but with population surges, industrialization and increasing demand for water, water insufficiency is imminent in many countries (Economic Commission for Africa September 2006). Globally, one-third of the population is undergoing some kind of physical or economic water shortage (IFAD, 2012). An increasing struggle for water from different sectors, including industry, agriculture, power generation, domestic use, and the environment, is worsening the situation especially for the poor as they struggle to access this limited resource for production and consumption (IFAD, 2012). The lack of water is an often insurmountable obstacle to helping oneself. Without clean water, you cannot grow food, you cannot build a house, you cannot stay healthy, you cannot stay in school and you cannot keep working. Without clean water, the possibility of breaking out of the cycle of poverty is incredibly slim (Water Project, 2016). Shortage of water hinders development through holding back food production, health and industrial development (Economic Commission for Africa, 2006).

The UN Environment Program related the present-day shortage of water and the quality, and it concluded that clean water in sub-Saharan Africa is of inferior quality than any anywhere else in Africa, with only 22 % to 34 % of inhabitants of at least eight sub-Saharan countries having available clean water (Tatlock, 2006). Hunter et al. in 2010 indicated that only 60% of the total population has access to clean water in sub-Saharan Africa as opposed to 92% in Northern Africa. Also, in sub-Saharan African countries there are extensive geographical variations regarding access to potable water. Cameroon, for example, has 67.1% of national coverage as opposed to Gabon and Congo who have 87.9% and 72.4% of national coverage respectively (Pullan et al. 2014). The aforementioned information confirms the need for research on potable water in Cameroon.

### 2.2.3. Water politics in sub-Sahara Africa

It is water availability that poses enormous challenges for accomplishing water security. Where water schemes, such as rivers or lake basins and aquifer systems, are used as internal or external

boundaries, water-related issues become complex by the need to ensure organization and dialogue between autonomous states with established, diverse and sometimes conflicting interests (Wouters, 2013).

Colonialism originated with the notion of nation-state, and national boundaries. It created trans-boundary waters as a consequence. The Niger basin, for instance, became transboundary in the colonial period because both the French and British empires used the water resources. The French had exclusive use of the Senegal River during the colonial period and Guinea had access to Senegal River basin only after independence in 1958 (Tatlock 2006). Across many countries, collective water basins supply 60 percent of global water to about 1/3 of the population worldwide and are crucial spots for regional disagreements and, a collaboration between countries (Giordano et al., 2013). Water sources shared by most countries in Africa include; Nile River, Volta River, Zambezi River, and the Niger Basin (Ofori-Amoah, 2004).

Following many years of unfair treaties and gradual bilateral agreements signed during the colonial era, the Nile Basin Initiative (NBI) was introduced in 1999 to institute a multidimensional, basin-wide framework for collaboration between countries (Freitas, 2013). This initiative was signed by nine countries including Burundi, Democratic Republic of Congo, Egypt, Ethiopia, Kenya, Rwanda, Sudan, Tanzania and Uganda, and was endorsed by the global community. The aim of this move was to initiate a more sustainable and equitable method for using the river Nile's Basin (Freitas, 2013).

All these treaties and bilateral agreements are indications that water reserves and associated issues are very important in the 21st-century politics. Even with treaties and initiatives for sustainable use of water reserves in place, many countries in Sub-Sahara Africa still experience water scarcities daily (Ofori-Amoah, 2004). These scarcities most of the time are the origin of conflicts. Kitissou et al. (2007) asserted that communal water resources are a point of potential water conflicts in many countries in Africa. Gleditsch (2012) explained that "more attention is being paid to the specific causal mechanisms linking climate change to conflict, such as changes in rainfall and temperature, natural disasters, and economic growth" (p. 2)

Even though these rivers are the principal source of water, Sub-Saharan Africa endures overloaded water systems as a result of rapid population growth. Fragile administrations, fraud, mishandling of resources, inefficient financing, the absence of eco-friendly research and lack of infrastructure only goes further to exacerbate the problem Tatlock (2006).

Although there is low per capita provision of resources, water pressure is alleviated by a low amount of water extracted per year, resulting in inadequate access rates as well as a low depth of access to water (IMF, 2015). The explanation for this low access suggest a deficit of infrastructure, deficient, obsolete, or poorly maintained water reservoir, distribution, and treatment facilities (IMF, 2015). Solving water-related problems is critical in enabling sustainable growth and continuing stability. Although some countries have made progress, Sub-Saharan Africa in general trails most regions in the world in terms of water access, management, and supply (Freitas, 2013).

The insufficient rate of access in rural versus urban areas is also very obvious. Sub-Saharan African countries on average have 28% variance between the rural and urban rates of access to potable water (IMF, 2015). In addition to that, access to water has been politicized as some political leaders use it to gain political points. For example, in 2002, the President of Botswana sent forces to the Kalahari Desert to demolish water holes and wells of native Bushmen in an effort to remove them from the desert and assimilate them in modern Botswana social order (Workman, 2009). This was not the solution since the Bushmen went further into the desert and tried to live under difficult conditions (Workman, 2009).

The African countries have a hard time increasing access to potable water to its rural population and doing it effectively is a serious challenge; and for this reason, there is continuous intervention by development partners (IMF, 2015). Many sub-Saharan African countries are now engaged in a decentralisation of rural water management to local communities in contrast to the urban areas where management is under the control of publicly owned water utility (IMF, 2015). Water is so important that hydro-politics influence policymaking at the local, national, and international levels (Giordano et al., 2013).

### 2.2.4. Water conflicts and socio-economic effects

Water-related conflicts started from time immemorial and have persistently been a regional and worldwide predicament. The past decades have witnessed a proliferation of a number of conflicts as a result of water scarcities. Considering the circumstances in the early and mid-twentieth century, many of the cases had to do with sub-national conflicts, terrorism, and local conflicts instead of transnational disputes (McNeish, 2012). No historical records indicate that shortage of water resources has caused countries to go to war even though there are certain pessimistic situations (Kameri-Mbote, 2007). The Nile basin is regarded as a potential spot for conflicts between nations that share this water resource. Egypt, the downstream country, has the most commanding military force among the countries that share this basin. Egypt is uncertain whether the countries at the upstream will divert water and create shortage without knowledge. Egypt has used its military might to regulate activities in the Nile River because it is the only source of water for the country (Ofori-Amoah, 2004). Additionally, "conflict and infectious diseases may have a mutually reinforcing impact on each other leading to an even more devastating situation for human health" (Fu¨rst et al., 2009, p. 1). Furthermore, conflict and poverty are the aftermaths of unrest in a population (Devakumar et al., 2014).

Faced with the situation of imminent conflict and regional uncertainty, the countries involved have resorted to cooperative solutions and are politically determined to create a legal framework for the governance of the Nile River (Kameri-Mbote, 2007). Uganda, Sudan, and Egypt initiated an agreement to share the waters of the Nile River. This may avert water crisis between these nations (Ofori-Amoah, 2004). The Rive Nile case brings to light a form of water regulation and access rights through shared association of various countries.

Levy and Sidel (2011) observed that water disputes both within and between nations are greatly increased and have outlined a number of factors that contribute to water conflicts including low rainfall, inadequate water supply, and dependency on one major water source; population explosion and fast urban development; modernization and industrial development; and a history of armed conflicts and fragile interactions between countries and among communities in the same countries. Even though the world

acknowledges that water-related problems stretch out beyond boundaries, little to no efforts have been made to deliberate on global water governance that looks at shared water challenges inclusively (Cooley et al., 2013). In the first Water Development Report, the UN affirmed that water conflict is fundamentally a problem of governance and communities are encountering many social, economic and political problems on how to manage water more efficiently (UN, 2003). Increased pressure on global water reserves significantly has effects on the social, economic and environmental livelihood of the population (Cooley et al., 2013). This notwithstanding, water shortage can provoke regional friction and dispute and can be at the center of terrorism, local tribal and ethnic conflict, and political conflict in the context of the struggles for economic development (Gleick & Heberger, 2012).

In the past, water conflicts have not created a global war but regional and tribal conflicts have been reported for using water conflicts to score political points (Kreamer, 2012). An example is a civil war in Sudan that led to the deliberate destruction of wells around Tina village and water pollution in Khasan Basao in 2003-2004 (Kreamer, 2012). Another example is in Zimbabwe with the Bulawayo population. Museinwa (2004) explained that although there was no hindrance to access to water on ethnic lines, independence did not bring about water security to the Bulawayo population. Between 1982 to 1984 and 1986 to 1987, the Bulawayo community witnessed many man-made water shortages as a result of politically driven water disputes; as the government at that time was determined to reprimand the Bulawayo City (Museinwa, 2004). Potential areas of water disputes will likely be in areas where there is pressure and a shortage of water (UN, 2012).

In 2012, Donnelly, Cooley, & Morrison argued that disputes put water safety at risk and jeopardize the physical infrastructure necessary to access water, sanitation and hygiene services, including; treatment plants, drainage systems, dams, or irrigation channels. Similarly, in war-torn areas, where there is inequality and inadequate access to water supply and sanitation services, there is the likelihood that the situation will worsen the social instability, tensions, violence, and conflict, thereby risking water safety (UN Water, 2013). Water disputes could directly or indirectly affect the social capital and human resources necessary to manage water associated infrastructure, governance, and social or

political structures (Donnelly et al., 2012). This is especially the case when water and other services linked to water are delivered at the local level; those services are less resistant and more susceptible to external problems. Shortage of water could result in political insecurity or disputes at the community level within countries or neighboring communities, usually aggravated by the efforts to make much profit through hysterical water billing (UN Water 2013). As water is an important need for humanity and the environment, there is no doubt that the increasing inequality between demand and supply of water and its burden on human development, have contributed to water conflicts (Ogendi & Ong'oa, 2009).

The actual link between water and conflict remains controversial and speculative. While some studies suggest that it is not easy to determine causal relationships between water and conflict, other studies argue that there is a link between them. In 2003, Wolf, Yoffe, & Giordano claimed that "although wars over water have not occurred between countries, there is ample evidence that the lack of clean fresh water has led to intense political instability and that acute violence has occasionally been the result" (p. 30).

Since water is a multi-purpose commodity, social conflicts over its usage are inevitable because it is a fundamental human necessity, the basis of subsistence, an essential element of the environment, a cultural symbol, and a money-making product. Handling social conflict is fundamental to good water management (Conca, 2006). Freitas (2013) also argued that increasing pressure on water reserves can result in national discontent; increase frictions between communities and create reasons for armed conflict. The gradual shortage of potable water during a conflict, plus the absence of alternative sources, there is a cause and effect association between water shortages and conflicts (Bernauer & Siegfried, 2012; Kreamer, 2012). As regions experience scarcity of water, rivalry for this resource may increase, causing possible conflicts. For example, in 2005, water scarcity escalated the conflict in Kenya Rift Valley, which resulted in an outbreak of deadly war between the Masai and the Kikuyu (Freitas, 2013). A decrease in the quantity or quality of water can prompt displacement of many people, and consequently social, economic and political problems for receiving countries (Carius et al., 2004). Nevertheless, the consequences of water conflict are still to be clarified and it is yet to be understood why the same

environmental concern creates various effects to a variety of social, economic and political settings (Okpara, Stringer, Dougill, & Bila, 2015).

Though there are huge hindrances to peace caused by existing and future conflicts over water, there is some optimism that these conflicts can open up other avenues for efficient water management (Levy & Sidel, 2011). For example, the countries that initiated the Nile Basin Initiative in 1999 have collaboratively developed the Nile River, mutually enjoyed economic benefits and peace and security in the region (Nile Basin Initiative, 2016). This is an indication that in spite of the fact that there are widespread perceptions in the literature that water resources shared by countries tend to cause hostility rather than collaborative solutions, water conflict is an opportunity for fruitful cooperation.

There are important relationships between water and conflicts. First, water disputes can erupt where there is a problem between access and distribution of water resources. The control and inefficient management of water can ignite conflicts especially in situations where water flows across countries and the states do not have the human, technical and administrative capabilities (Gehrig & Rogers, 2009; Ludwig, Roson, ografos, & Kallis, 2011). The distribution of water to various consumers for different purposes, even in a situation where there is sufficient water, can always lead to disputes. Water is critical in supporting living conditions especially agricultural livelihoods which explain a relationship between water and conflicts when there is scarcity (Conca, 2006). Saliu et al. (2011) provided an example of conflict at the Niger Basin with the following beneficiary countries: Guinea, Mali, Niger, and Nigeria. Nigeria is the downstream country of these countries and has two of the largest hydropower plants in the Niger Basin. Presently, Nigeria is expanding river Niger for commercial navigation, and fisheries. Mali and Niger are semi-arid nations and have food shortage problem caused by low rainfall. These two countries are on the verge of initiating irrigation to increase food supply; though irrigation uses too much water (Saliu et al., 2011). Therefore, it is anticipated that the creation of this irrigation will bring about severe economic problems in Nigeria.

Usually, capital-intensive water infrastructure projects including large dams, irrigation schemes, and transportation canals are hot spots of disputes. These kinds of water conflicts are mostly seen with

the cultural minorities, and rural poor or underprivileged groups (Conca, 2006). These water disputes span from ethnic hostility as a result of access to a water resource, to the whole population being relocated because of the building of a dam, to the whole community's reaction to the inefficient management of water resources (Gehrig & Rogers, 2009). Widespread conflict over water erupted in Kenya in 2012, whereby over 100 people lost their lives in conflicts between farmers and cattle herders over land and water. This fight was a continuation of an ongoing conflict between the Pokomo people - mainly agriculturalists - and the Orma, seminomadic cattle herders (Gleick & Heberger, 2014).

Regarding conflicts between population and the state authorities, the early phase of conflicts is usually demonstrated by acts of civil defiance, which may cause the situation to deteriorate into sabotage and violent demonstrations if effective participatory decision-making is not accomplished. Violent suppression by authorities in reaction to the demonstration by population has always been the case (Gehrig, & Rogers, 2009). For example: South Africa witnessed the population in Cape Town demonstrating against the local government for its inability to supply sufficient water and power to the disadvantaged population: the demonstration was marred by burning of tires, cars damaged, and stones thrown at the police after persistent dissatisfaction raged over the shortage of essential amenities (Wang, 2012).

While other countries experience water management crisis, some Sub-Sahara African countries have progressed in effective water management owing to large-scale investment and efficient management approaches. These strategies have enabled the countries to have a complete retrieval of cost for potable water by employing gradual tariff scale. These countries include Burkina Faso, Lesotho, Mozambique, and Seychelles (IMF, 2015). Initiatives and collaboration can be very instrumental in resolving water conflicts and ensuring public health, food security and social, environmental, and economic strength (Levy & Sidel, 2011).

Levy and Sidel (2011) offered solutions to contain water disputes including minimising the consumption of water by reducing inefficient uses, increasing potable water supply, creating and sustaining new groundwater wells, planning and executing better approaches of desalinization, and

increasing reprocessing waste water from domestic activities. Additional methods include; resolve conflicts over water through laws and regulations at the local, state or provincial, national, or international level, a collaboration between countries or provinces and negotiation and settlement.

Population growth is a social issue which can cause conflict over water. This problem likely will become severe especially in countries with high population growth rates that share a major source of freshwater with other countries (Levy & Sidel, 2011). Fast-growing cities in sub-Saharan Africa have led to huge consumption of water from existing supplies. The inflow of human wastewater exceeded the improvement of water management scheme resulting in contamination of natural water supplies, involuntary use of water for irrigated agriculture, inconsistent water delivery and ecological distress for aquatic life because of the highly contaminated water sources (Van Rooijen, et al., 2009). Therefore, making available efficient and sustainable water provision and sanitation amenities necessitates good governance system and comprises obligation to efficient control (WHO/UNICEF, 2006).

**2.2.5. Cameroon policies and conventions on water**

The institutions governing water have various functions that are reflected in the laws and decrees regulating water in Cameroon, including project planning, policy formulation, pollution control, financing, and execution of water and sanitation projects (Fonteh, 2004). This is in accordance with Article 2 of the Cameroon Water Code of April 1998 which states that water is part of the common heritage of the nation; the State provides its protection and management and must facilitate access to water for everyone (GWP, 2015). Also, the preamble of the constitution summarises, in general, the economic and social rights that must be adhered to. Presently, Cameroon lacks official water policy guidelines, although there are documents such as the Water Supply and Sanitation Policy in Rural Areas and the Water Sector Policy Letter in Urban Areas (GWP, 2010). After the Framework Law on Environmental Management (No. 96/12) of 5 August 1996, Cameroon approved Law No. 98/005 of 14 April 1998 on the Water Sector, whereby water is considered a national good that the state safeguards and controls while enabling access to everyone (GWP, 2010). A different law concerning water quality was legislated in 1998 and the aim was to supplement the environmental law. The law requires the

institution of national quality standards, five-yearly reviews of the National Environmental Action Plan, and the creation of an Inter-Ministerial Committee on the Environment. In 2005, Decree No. 2005/493 presented the techniques for the supervision of public drinking water and liquid sanitation in urban and suburban areas (Fonteh, 2004).

For these laws to be operationalised, Fonteh (2004) outlined some decrees that have been established to guide the water sector. These include:

Decree No. 2001/161/PM which established the roles, organisation, and functioning of the National Water Committee. Article 2 of this decree stipulates that the committee is responsible for (i) studying and proposing to the government all measures or actions likely to ensure the protection and sustainable use of water. (ii) Expressing its opinion on water issues and problems raised by the government.

Decree No. 2001/162/PM presented conditions for appointing officials to monitor and control water quality. In accordance with Article 1(3), the officials concerned are in charge of controlling water quality, research, signaling and prosecuting offenses as stated in the provisions of the law governing water activities and its implementation instruments.

Decree No. 2001/165/PM of 8 May 2001 specified the modalities for protecting surface and underground water against pollution. In its article 15, this decree stipulates that “individual or corporate bodies owning installations hooked up to public or private sewerage systems, artificial planning for integrated water resources management and development in Cameroon 2 drainage channels or wastewater treatment plants, shall be subject to the payment of a sanitation tax in accordance with the modalities laid down in the finance bill.

Decree No. 2001/216 of 2 August 2001 to set up a trust fund for financing development projects in water and sanitation. This is to ensure sustainability of investments in the sector.

**2.2.6. Linking water and poverty**

Though the importance of water has globally been established, the right to clean water and sanitation continues to be a hindrance to the world poorest population. Shortage of clean water and

necessary sanitation slows down economic growth, impedes development towards gender equality and makes the health of the population vulnerable (Hesselbarth 2005).

In Africa, political instability, ethnic conflicts, climate change and other man-made causes account for poverty (Water Project, 2016; Vorosmarty et al., 2010). One of the causes often ignored is a lack of access to drinkable water (Water Project, 2016). Particularly, the struggle for water resources between various consumers and interest groups is growing (Ludwig, van Slobbe, & Cofino 2014; Hoekstra, et al., 2012). The effects of climate change are expected to escalate the situation of water shortages if alternative measures are not taken (Mukheibir, 2010; Nkem et al., 2013; Tarrass & Benjelloun 2012). Taking into account this background, effective management of water reserves became apparent as an important concern (Roco, Poblete, Meza & Kerrigan2016; Khodarahimi, Boogar & Johnston 2014). Effective supply of water resources in the face of climate change effects depends on adoption of practical water management methods, with fair access as the ultimate goal (Mukheibir 2010; Roco et al., 2016).

The Food and Agricultural Organisation (FAO) (2015) revealed that one in five people in developing countries do not have access to adequate fresh water, while average water use in Europe and the United States of America ranges between 200 and 600 liters/day. In addition, the poor pay more for as the underprivileged urban population pay 5-10 times per liter of water than the rich urban population (United Nations Development Program, 2006, p. 10; Fotso, Ezeh, Madise, & Ciera, 2007).

Water-borne diseases often resulting from water shortage, have killed more children in the last decade than those killed in wars worldwide in the last six decades cumulatively. But water policies relate only to mitigating water waste in watering gardens and washing cars (Curry, 2010; Tarrass & Benjelloun, 2012). Waterborne diseases are part of the causes of malnutrition in children, which in turn reduce important nutrients in the body and affecting the immune system. This is an indication that “a person's survival depends on drinking water (Utsev & Aho, 2012, p. 1). Thus, the importance of clean water and sanitation for the health of the population at large must be acknowledged in public and health policies and mirrored in the budget of curative and preventive health amenities (Tarrass & Benjelloun 2012; DeNicola, et al., 2015).

A cross-section of the population of Cameroon does not enjoy access to water either as a result of high pricing of water connection (Nyambod & Nazmul, 2010). The effects of the absence of pure water and inadequate sanitation are far-reaching. High death rates as a result of dehydration and malnutrition, resulting from diarrheal illnesses that could be averted by using fresh water and good hygiene are registered among children in Cameroon (Metwally, Ibrahim, Saad, & Abu, 2006).

In Cameroon, most of the population is deprived of access to fresh water partly as a result of poor management and inadequate development of current water reserves instead of a real water inadequacy (Nyambod & Nazmul, 2010). When water sources and sanitation services are provided, they are not well managed owing to financial constraints. The frequency of the control of clean water is inadequate, and no awareness creation for consumers to understand that water in wells is dirty. Furthermore, consumers are more concerned with quantity than quality once water has been delivered (Awuah, Nyarko, Owusu, & Osei-Bonsu, 2009).

With increases in population and economic activities, water supply in most instances is overused and this hinders the capability of cities to bring investments, save the environment, and satisfy the basic needs of the population. Water is crucial for economic activities (UN Water, 2007). Padowski and Gorelick (2014) cautioned that “by 2040, without additional measures, 44% of cities are vulnerable due to increased agricultural and urban demands” (p. 1)

Regardless of the importance of water, many international declarations and funders' policies presented water as an economic commodity. Rahaman & Varis (2005) advised that promoting the idea of water as a commodity is risky because it diverts the perception of water as a community service and common concern. They reiterated that perceiving water solely on economic terms, wipes off the idea of ensuring water sustainability. Haller, Hutton, and Bartram (2007) differ from this view and estimated the value of water in economic terms by pointing out that investing $1 for every water and sanitation services will yield between $5 and $46, with the highest gains in underdeveloped countries. Although it is important to perceive water as an economic good, it defeats the purpose of poverty alleviation considering that water is a basic right and inalienable.

The provision of water can facilitate social and economic growth and reduce poverty at the community level where water is important for productive activities. The potential of local entrepreneurs remains untapped when there is no water and can be a vital link in poverty reduction (WHO, 2016). Therefore, "investments in water are a good bet: not just for social, health and environmental reasons but also to directly generate economic growth that is, in many cases, effective in reaching the poor and that can transform the prospects of many of the world's poorest regions" (WHO, 2016, p. 13).

### 2.2.7 Social implications of water scarcity

The proliferation of fresh water and sanitation as a significant commodity to population health is not a novel notion. In fact, in 350 BC Hippocrates advised population to sterilize water to kill water-borne bacteria. In developed countries such as the United States and central Europe eradicated water-borne diseases by the 20th century when access to fresh water was almost universal. This was done by caring for water reserves and initiating sewage systems (Montgomery & Elimelech, 2007). In contrast, developing countries are still seriously affected by inadequate water supply. Consequently, they are prone to unnecessary waterborne-diseases and deaths every year (Montgomery & Elimelech, 2007).

The unfavorable consequences of the absence of water and sanitation amenities stretch outside the indisputable magnitude of diseases. In 2005, Hesselbarth acknowledged that potable water is vital for women's empowerment, girls' education and health. It is common knowledge that in areas with no pipe borne water in homes, women are responsible for fetching water from the nearest sources that are usually found far away from home and women spend many hours reaching and collecting the limited quality water required by the household (FAO, 2016; Montgomery & Elimelech, 2007). Graham, Hirai, & Kim (2016) substantiated that the many hours used in fetching water reduces the amount of time used in education, income generation, and other beneficial initiatives. Wateraid (2012) explained that girls usually start collecting water early in life and continue with this responsibility until they are old. Ako, Shimada, Eyong, and Fantong, (2010), corroborated that the ability to save travel time for water collection by enhanced amenities for women and children can, directly and indirectly, add not only to the education

goal (MDG 2) but also to improving opportunities for women by involving them in development and in income generating endeavours (MDG 1). However, there is evidence that “having time does not necessarily translate into having access to income-generating activities – and are concerned primarily with economic growth rather than women's health status or quality of life" (Sorenson, Morssink, & Abril, 2011, p. 6). Since "women and girls are disproportionately affected by issues like water, they often are in the best position to identify solutions and play key roles contributing to the success of water programs on the ground" (UNW, 2015, p. 12).

FAO (2015) studied gender activities in rural areas and explained that rural women have less access than men to productive resources, services, and opportunities, such as land, livestock, financial services and education. FAO (2015) underscored that the social consequences of inadequate education and assets for women results in high rates of malnutrition, infant mortality and, in certain countries, HIV/AIDS infection. Cook, Kimuyu, & Whittington (2016) also clarified that clean water and sanitation facilitates women and girls’ social and economic power, enabling them to be active change agents, leaders, and businesswomen in their society. Also, in many international policy statements and development schemes, women have been seen as very important in enhancing the management or governance of water within the framework of poverty alleviation (UN, 2006). Gender equality has been demonstrated to be linked to well-sustained and improved usage of community water and sanitation services (Ako et al., 2010). Ivens 2008 argues that “improving women’s access to safe water results in better health, enhanced dignity, better school performance, and less exposure to water-related hazards such as opportunistic gender-based violence, water-borne diseases, animal attacks, and the physical consequences of carrying heavy water loads” (p. 64). Yet rural women and girls encounter structural limitations that inhibit them from fully experiencing their human rights and impede their attempts to ameliorate their lives and others (UN, 2012).

While some studies indicated that women's workload is reduced with access to potable water (UNDP, 2006). Other reports and case studies have indicated that the reduction of time spent by women

in fetching water does not automatically reduce access to water. Also, women who secure access to water are not actively involved in empowering activities (UNDP, 2006).

Cameroon nonetheless has the practice of the 16th century where access to potable water in most communities is not pragmatic; where communities sharing the same stream with domestic animals is widespread and were pregnant and worn out women still walk for long distances just to collect water for the household. More often than not, these women are subjected to environmental hazards and water-borne diseases such as diarrhea, cholera, and dysentery (Nyambod & Nazmul, 2010).

The water crisis in Cameroon is detrimental to the health of the underprivileged population especially women and children who trek for many hours in search for unreliable water reserves where they become vulnerable to water-borne diseases (Global Giving, 2013; Nauges, Celine, & Strand, 2011). Potable water resources do not only save time but prevent the spread of diseases like diarrhea responsible for a greater number of child mortality and malnutrition (Foster & Briceño-Garmendia, 2010). When there is a water shortage, children's education is disrupted; the time the children use to fetch water is the time they should be in school. For "young girls the lack of basic water and sanitation services translates into lost opportunities for education and associated opportunities for empowerment" (UNDP, 2006, p. 47). Also, when there is a sick family member, the woman will stay home to care for this person and will not work or pursue educational opportunities. The money for food or school supplies will be diverted in taking care of the needs of the sick person (Water Project, 2016). Undoubtedly, lack of clean water is a burden on the population as it influences not only the social benefits but the economic opportunities that come with it.

### 2.2.8 Water projects and sustainability

Sustainability of freshwater reserves for next generations has prompted a new discourse on water management (Marlow, Moglia, Cook, & Beale, 2013). To highlight the importance of this discourse, McMichael and Butler (2007) opined that accomplishing and preserving population health for individuals can only be achieved through sustainability, contingent on a complete understanding of the social, economic and environmental circumstances. Some studies have revealed that the sustainability of water

in rural areas is usually influenced by "the dynamic and systemic interactions of technical, social, financial, institutional, and environmental factors that can lead to premature water system failure" (Walters & Javernick-Will, 2015, p. 1). In 2016, Dean, Fielding, and Newton substantiated that sustainable method for water management necessitates the participation of the community in policy changes, practice, and technology. However, sophisticated technology permits developed countries to counterbalance high stressor intensities, without addressing the foundation of the triggers; meanwhile, the developing countries continue to be susceptible to the effects (Vorosmarty et al., 2010).

The usual approach to water governance is enabling consistent water supply and sanitation using efficient waste management. Donors in partnership with communities do initiate community-based development projects. Even with “many billions of dollars’ worth of investment over the past three decades, a stubbornly high proportion of water point systems across the continent are in a state of disrepair" (Foster, 2013, p. 1). The financial implications of a community project are bound to have significant consequences in health and welfare since the community will have no other choice than to turn to dirty water and other sources far away from their homes (Forster, 2013). World Vision (2009) reported that most community development projects have been unsuccessful in sustaining themselves and becoming self-reliant. Vairavamoorthy, Eckart, Tsegaye, Ghebremichael, and Khatri (2015) believed that with climate change, these established ways of water governance are inadequate for sustainability. In an attempt to "boost outcomes, implementing organizations have also sought to buttress community-based management with a demand-responsive philosophy and greater participation in planning and construction" (Forster, 2013 p. 1).

For rural water users, sustainability is a challenge. Since the last years of the Decade of International Drinking Water Supply and Sanitation, 1981–90, community management of rural water supply has been encouraged by international organizations, governmental and nongovernmental alike (Whittington et al., 2008). Nevertheless, in rural Africa, many water points such as hand pumps are not working (World Bank, 2016). Failure is mostly as a result of poor planning and service delivery (Carter, Harvey, & Casey, 2010). Meanwhile, the empowerment of communities grounded on values of

participation, decision-making, control, ownership, and cost-sharing can lead to sustainability. Unfortunately, community management, operations, and maintenance of water projects have scarcely been improved (Lockwood, 2004).

**2.3 Summary**

Summarily, the preceding literature review highlighted various dimensions of the effects of water on the lives of the population. It started with the discussion on theories critical to the understanding of the topic and essential to guide the research. Theories such as the hierarchy of needs theory which explains the motivation to acquire more needs when basic needs such as water are met. The theory of change details how an anticipated change is envisioned and the sustainability theory explains the need for a sustainable and potable water.

The literature has also presented the global discourse on water as emanating from the recognition of the right to freshwater. The recognition of this right followed a series of global conventions when the UN started paying attention to the global water issues and searching ways to address these issues through policies and intervention programs.

An examination of this literature has also revealed that water politics is a problem in sub-Sahara where rivers and basins are used as internal and external boundaries. Many treaties on water issues have been signed in Sub-Saharan Africa, indicating that access to water in this part of the world is problematic and critical for human existence. Water conflicts are associated with socio-economic conditions. These conflicts have resulted in certain situations that almost triggered water conflicts between nations, and ethnic groups but has never degenerated into a war. The literature suggests the recognition of water as an important commodity and stakeholders need to do everything to prevent a war that will jeopardise access to water. Nonetheless, the socio-economic development is linked to water conflicts.

The unique role the Cameroon government played in enacting laws to guide water supply in Cameroon was discussed in the chapter. These laws put in place are intended to sustain water supply in Cameroon. The literature also revealed that these laws are not effective as Cameroon still trails other Sub Saharan African countries in delivering potable water to its population. Without potable water supply,

there will be waterborne diseases which translate to other social and economic problems and therefore, a poverty-stricken population. Chapter three details methods used in gathering data for the study.

# Chapter 3: Methodology

This chapter describes the qualitative research methodology applied in the study. The research design is a descriptive case study. This approach is directed by sampling procedure, data collection, and analysis. Specifically, the chapter provides a synopsis of the research design, description of the case study, population, and research setting. The data collection methods used comprised sampling and participant recruitment, face to face interviews, focus group discussions, and document reviews are also presented. The data analysis approaches used included the description of the case study and thematic analysis. The chapter ends with an elaboration on the strategies put in place to make certain the scientific accuracy and ethical concerns in the study.

## 3.1. Research design

According to Vogt et al. (2012), a research design refers to the "basic methods of collecting evidence: surveys, interviews, experiments, observations (participant and naturalistic), archival research (data and textual archives), and combinations of these methods" (p. 3). A research design is a logic that links the data to be collected and the conclusions to be drawn from the initial questions of a study (Maxwel, 2008). A research design is important because the whole study eventually flows depending on the design selected, and the design selected is the one that responds to the researcher's questions and theories (Vogt, 2012; Mack et al., 2005). This involves defining the basic components of the investigation, such as research questions and theories, and understanding how validity and reliability can be established.

### 3.1.1. Qualitative research methodology

In general, this study's methodology was informed by Baxter and Jack's (2008) qualitative case study design, where a one-on-one interview technique was applied with different interviewees. These authors define case study research as "an approach to research that facilitates exploration of a phenomenon within its context using a variety of data sources" (Baxter and Jack, 2008, p. 3). This research approach is important considering its power to deliver intricate word-based explanations of how people experience a particular phenomenon. It also specifies evidence about the human side of a problem, including behaviours, beliefs, opinions, emotions, and relationships of individuals (Mack, Woodsong,

Macqueen, Guest, & Namey, 2005). This approach is also used to distinguish insubstantial elements such as social norms, socio-economic status, gender roles, ethnicity, and religion, whose role in the research problem may not be immediately noticeable (Mack et al., 2005). It is the best approach to understanding the researcher's approaches to the investigation, and also the procedures of data collection and analysis that will be employed (Creswell, 2013).

This study employed the qualitative research approaches. According to Patton and Cochran (2002), "qualitative research is characterised by its aims, which relate to understanding some aspect of social life, and its methods which (in general) generate words, rather than numbers, as data for analysis" (p. 2). It is largely centered on a small number of groups, and these groups are made up of a small number of interviewees (Pan American Health Organization, 2005). Qualitative research is usually done within the natural locations of the phenomenon, behavior, or event being studied, whereby, the researcher documents all data, such as transcripts, observations, and personal thoughts, then categorises and interprets the data (Sharts-Hopko, 2002).

### 3.1.2. Case study research

According to Trochim (2006), a case study is a rigorous investigation of a particular entity or given setting. A case study is a "study of peculiarity and complexity of a single case, coming to understand its activity within important circumstances" (Stake, 1995, p. 11). It is a renowned instrument in guiding qualitative research; it can be used to explore specific or various cases (Stake, 1995). This specific case may be an activity, event, or project that are time and place specific (Creswell, 2009). Case studies "portray, analyze and interpret the uniqueness of real individuals and situations through accessible accounts and to present and represent reality" (Cohen, Manion, & Morrison, 2000, p. 79). Even though the term 'case study' has various definitions, the main idea is the necessity to get an in-depth understanding of a problem, event, or phenomenon by studying it profoundly in its natural, everyday setting (Crowe et al., 2011).

A case study enables the examination of an intricate social element using a variety of approaches, thus painting a holistic picture of the phenomenon under consideration (Stake, 1995). Case studies are an

important approach to the initial, fact-finding phase of research, as a framework for developing more organised instruments that are required in surveys and experiments (Rowley, 2002). Case studies are "useful in providing answers to 'How?' and 'Why?' questions, and in this role, can be used for exploratory, descriptive or explanatory research" (Rowley, 2002, p. 16). A case study permits the 'exploration' and appreciation of multifaceted problems. It has been considered a vigorous research method, especially when comprehensive in-depth research is needed (Zainal, 2007). A case study is flexible, rigorous and informs the progress of a theory, evaluation of programs, and the development of theories (Baxter & Jack, 2008). It also permits a close relationship between the researcher and the participants, thereby facilitating the storytelling process by participants (Crabtree & Miller, 1999).

Robert Stake's work has been especially useful in developing the case study method for empirical research. His contributions have enabled the understanding of three main categories of a case study, namely: intrinsic, instrumental, and collective (Stake, 1995). Stake explained that an intrinsic case study examines an exclusive phenomenon. On the contrary, an instrumental case study explores a specific case to understand a larger problem or phenomenon. In a collective case study, there are several case studies and the researcher uses this approach to examine the case instantaneously or consecutively to understand a larger problem (Stake, 1995). This study explores a unique phenomenon and therefore it is an intrinsic descriptive case study.

Starman (2013) noted that a "case study is usually a study of a single case or a small number of cases" (p. 35). The choice for this case study research was based on the need to reflect deeply on the project's influence on the social and economic conditions of the population. As is considered for every case study, the Kumbo community exhibited enlightening characteristics including water politics, management, and ownership embedded with conflicts among stakeholders.

### 3.2. Setting description

The Kumbo Water Authority (KWA) project is located in Kumbo, in Bui Division, in the North West Province of Cameroon. Cameroon is situated in central-western Africa, and neighbouring countries include the Central African Republic, Chad, Republic of the Congo, Equatorial Guinea, Gabon, and

Nigeria (Ako et al., 2010). The country has 10 provinces and 58 divisions, and the capital is Yaounde (WHO, 2012). Cameroon experiences unequal distribution of rainfall from one area to another (Ako et al., 2010).

### 3.2.1. The topography

Cameroon covers an area of 475,440 square km (Molua & Lambi, 2007). The physical geography is diverse, with forests, mountains, large waterfalls, and deserts, falling into four regions. The northern Sahel region is bound by Lake Chad and the Chad basin; further south, the landform is a sloping plain, climbing to the Mandara Mountains. The central region stretches out from the Benue River to the Sanaga River, with a plateau in the north (Commonwealth, 2016). This region consists of the Adamaoua plateau, which divides the agricultural south from the pastoral north. In the west, the land is hilly, with a twofold chain of volcanic peaks, mounting to 4,095 meters high at Mount Cameroon. This is the highest and wettest peak in western Africa. The fourth region, to the south, stretches from the Sanaga River to the boundary in the south. There is a complex system of drainage. A number of rivers flow towards the west (Commonwealth, 2016).

### 3.2.2. Climate and freshwater reserves

Cameroon has a seaside of 402 km, and climate fluctuates with the topography. Cameroon is located between 2° and 13° north latitudes and between 8° and 16° east longitudes in West Central Africa (Molua & Lambi, 2007). Cameroon has two main seasons; the raining season that spans from May to November but fluctuates from the south to the north and the dry season that spans from December to March (McSweeney et al., 2010). Cameroon's wettest season "fall[s] between April and October, with rainfall highest at the coast but diminishing steadily northwards" (Molua & Lambi, 2007, p. 6). The reasons for this trend are that Cameroon is very close to the sea, which implies that winds along the sea line are overloaded with humidity. Also, the sea line lies at the right angle and moistens the wind, which is an indication that the winds from the southwest have many effects, not only on the gulf shores, that last for a long time (Molua & Lambi, 2007). Debundsha is known as the wettest place in Cameroon, and it is

located closest to Mount Cameroon, overloaded with 1000 mm of rain yearly, even though the semi-arid Sahel gets 700 mm per year (GWP, 2009).

### 3.2.3. Study setting and scope

This study is based on the single case study research of a local project that has existed for over 40 years in the African community of Kumbo. The study was limited to exploring the Kumbo potable water on the health and economic conditions of the target population within the boundaries of the Kumbo local council. I also examine the perspective of the various stakeholder's including their struggle for social and economic benefits and how it contributed to the Kumbo water conflicts. Finally, I look at the sustainability of the project. Other projects outside this area were excluded from the study. I deliberately excluded other projects inside and outside the community.

Neighbouring villages benefiting from the Kumbo water project were also not included. In terms of inclusion criteria, respondents included people who are directly or indirectly affected by the project, must be living in Kumbo and benefit from the water, have clearly agreed to participate in the study and signed written consent, have worked in the project or were involved in the project. In terms of time-space, this research examined project impact starting from initiation through to the present.

Kumbo is also known as Kimboh, Banso, Nsaw, and Nso, and it is the headquarters of Bui Division in the North West Province of Cameroon (Njoh, 2009; Page, 2002). The North West Province is also called the "Grassfield" region because of its mountainous and savannah topography (Page, 2002). Climate-wise, it has a dry season that runs from November to February, and a rainy season that runs from March to October. While the dry season is characterised by the wind and chilly mornings and evenings, the rainy season is characterised by a constant heavy downpour of rain, especially in August and the end of September (Kumbo Council, 2007).

Kumbo is located 110 km to the northeast of Bamenda, the provincial headquarters of the North west Region, and it is 1770 meters above sea level (Njoh, 2009), with a population of 321,969 inhabitants and a population density of 141 inhabitants per square kilometer (Governor's office, Northwest Region, 2017).

Njoh noted that Kumbo is the second largest city in the North West Province and has one of the largest kingdoms in the region. The city is known for horse racing, traditional medicine, its palace, a market, and two hospitals. Lamnso is the main dialect spoken in the area, and it has been used since time immemorial (Kumbo Council, 2007).

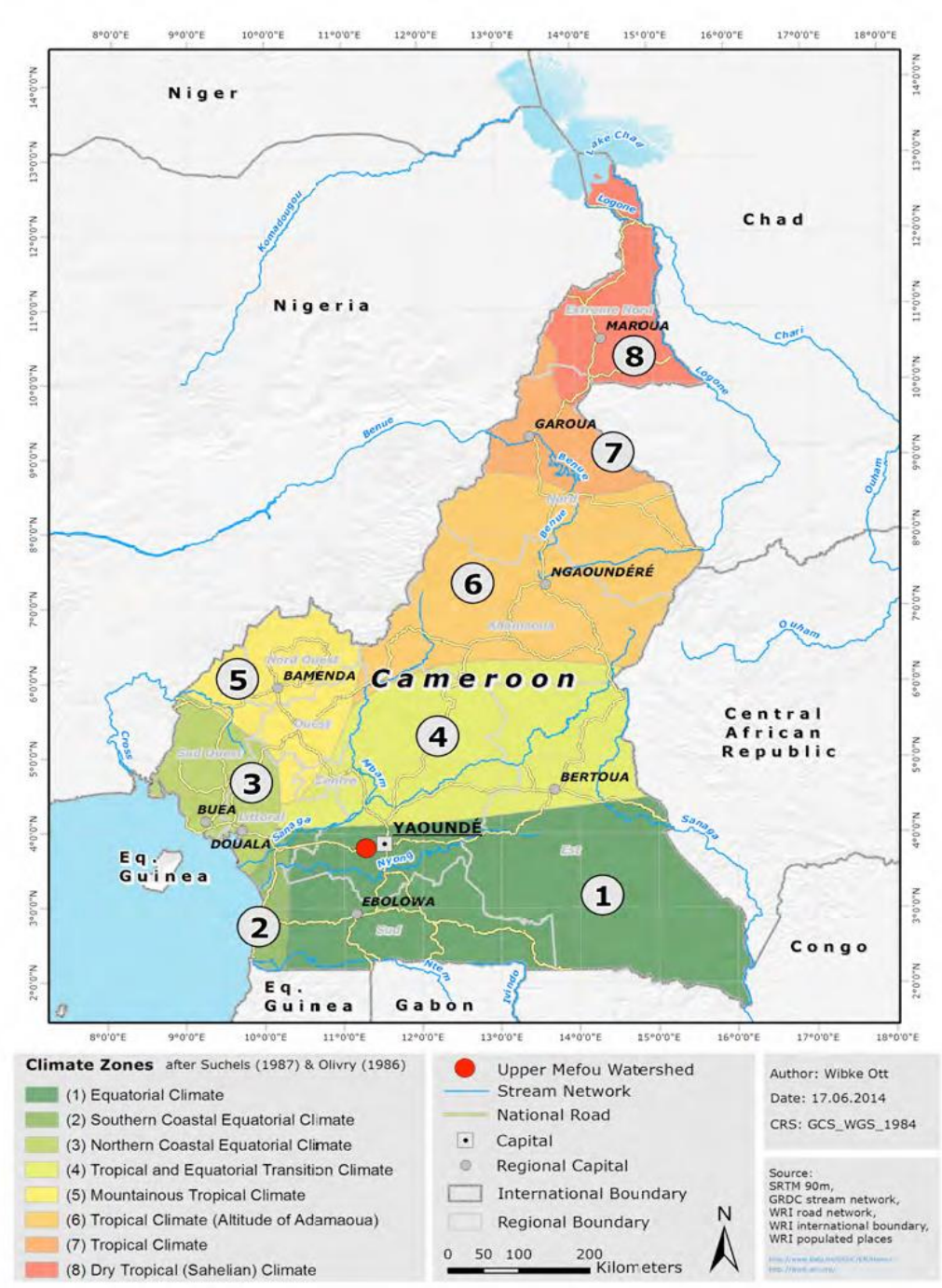


Figure 2: Cameroon map.

Source: OTT 2014. Climate Zones Cameroon

### 3.3. Data collection methods

The data for this study was collected using secondary and primary sources. According to Dudovskiy (2016), secondary data are available in books, newspapers, magazines, journals, and online portals. The selection of the secondary data followed these criteria suggested by Dudovskiy (2016), including qualification of the writer, trustworthiness of the source, quality of discussions, depth of analyses, and extent of the contribution of the research to the development of the research area. This information is found in the literature review.

A case study is a qualitative approach applied in this research, and Creswell (2007) noted this type of research underscores the need for various methods of data collection that enables a holistic representation of the case under consideration. In 2003, Creswell observed that researchers collected data using different methods. Some collect data through an instrument or test, or others collect data on a behavioural specification. While others simply "involve visiting a research site and observing the behaviour of individuals without predetermined questions or conducting an interview in which the individual is allowed to talk openly about a topic largely without the use of specific questions" (Creswell, 2003, p. 17). Stake (1995) argued that data collection starts at the initial thought of the problem before the commitment to conduct the research through background information, acquaintance with other cases, or first impressions. In any case, it is appropriate that researchers explain the data collection method concurrent with the research question (Stake, 1995). The initial data informally collected was redefined, replaced, or discarded as the research became clearer to the researcher. This study used three approaches to respond to the research questions, consisting of interviews, focus group discussions, and document reviews.

#### 3.3.1. Sampling procedures and techniques

This section describes sampling procedures and techniques, interviews and focus group discussions, and document review. The study employed purposive sampling and snowball sampling techniques to identify potential interviewees. The purposive sampling technique was used to recruit key informants, community leaders, and focus groups. The rationale and strength of purposeful sampling are

based on identifying information-rich cases for in-depth research (Patton, 1990). Emmel (2014) corroborated that "the purpose of purposeful sampling is to select information-rich cases that best provide insight into the research questions and will convince the audience of the research" (p. 2).

The snowball sampling technique "accesses informants through contact information that is provided by other informants" (Noy, 2008, p. 330). According to Noy (2008), this technique requires a recurring referral from participants who have been interviewed by other participants who are still to be contacted and the process continues. O'Dwyer and Bernauer (2014) also noted that snowball sampling comprises naming participants by way of recommendation from other participants. Ramesh, Ireson, and Williams (2017) categorised it as a non-probability sampling procedure as it is subject to participants' willingness to share the notice of participation to other participants qualified for the interview. This sampling technique is important when researchers are studying aspects that have distinctive characteristics that are of interest to the researcher but who cannot be engaged in a study through locations (O'Dwyer & Bernauer, 2014).

Snowball sampling has been recognised as a very popular approach among researchers from multiple fields in the social sciences involved in qualitative research. It is sometimes "used as the main vehicle through which informants are accessed, or as an auxiliary means, which assists researchers in enriching sampling clusters, and accessing new participants and social groups when other contact avenues have dried up" (Noy, 2008, p. 330).

The recruitment of this study required residents of Kumbo and those benefiting directly or indirectly from the project from a variety of backgrounds. Participants included key informants, community leaders, mixed groups (in terms of gender), project staff, and households. A list of key informants was obtained from the project staff. A preliminary arrangement was made for the focus group interviews with group leaders upon receipt of notice of interview. The project staff and participants were used to guide key community groups for the focus group discussions. In order to eliminate undue bias in the recruitment process, only one such recommendation was accepted from each participant. While issues

of sample bias are, to some extent, inherent in this method, previous contacts in the field helped to mitigate the risk of a limited pool of respondents.

The population of the study was drawn from the following community members: the Kumbo Water Authority staff, farmers, community members, local leaders, public health experts, community development officers, households, civil society activists, and civic leaders as well as the local leaders and government officials.

The envisaged sample size for the study was 30 participants. However, due to data saturation, we interviewed only 21 participants. After carrying out 21 interviews, the researcher noted that information became repetitive. Consequently, as soon as main categories were discussed, the researcher concluded that the study was reaching its saturation point, meaning that very few new themes or information were generated in the interviews. These 21 participants included 3 key informants, 2 project staff, 2 community leaders, 2 households (2 each) and 2 focus groups (5 each). According to Noble and Smith (2014), "reality is constructed by the research participants and the researcher, with the depth of data collected more important than recruiting large samples" (p. 2). Therefore, the 26 participants for this study were still valid for the study.

*Table 1:* Characteristics of interviewed participants

| **Participants** | **Age** | **Sex** | **Individual interviews IDI/Focus Group Discussion (FGD)/Households (HH)** | **Education** | **Occupation** |
|---|---|---|---|---|---|
| P 1 | <40 | M | IDI | Undergraduate | Assistant delegate |
| P 2 | <50 | F | FGD | Primary education | Farmer |
| P 3 | <50 | M | IDI | Graduate | Delegate |
| P 4 | 45-55 | M | FGD | Undergraduate | KWA board member/Teacher |
| P 5 | >60 | M | IDI | Undergraduate | Retired delegate |
| P 6 | <40 | M | HH | Primary education | Farmer |
| P 7 | <55 | M | HH | Primary education | Construction worker |

| | | | | | |
|---|---|---|---|---|---|
| P 8 | 35-40 | F | FGD | College | Teacher |
| P 9 | >40 | M | FGD | College | Teacher |
| P 10 | >40 | M | IDI | College | Water Technician |
| P 11 | <35 | M | IDI | College | Water Technician |
| P 12 | >50 | M | IDI | Primary education | Community Leader |
| P 13 | <30 | M | HH | Undergraduate | Student |
| P 14 | >50 | M | IDI | College education | Kumbo Council staff |
| P 15 | <30 | F | FGD | Community College | Teacher |
| P 16 | >30 | F | FGD | Undergraduate | Teacher |
| P 17 | >35 | F | FGD | Secondary education | Business person |
| P 18 | >40 | F | FGD | Primary education | Small business owner |
| P 19 | <60 | F | FGD | Primary education | Small business owner |
| P 20 | <45 | M | FGD | Primary education | Small business owner |
| P21 | >50 | M | IDI | Graduate | Legal adviser |

### 3.3.2. Interviews and Focus Group Discussions

According to Arksey and Knight (2011), “interviewing, is not a research method but a family of research approaches that have only one thing in common; a conversation between people in which one person has the role of a researcher” (p. 3). Selecting the right type of interviewing method is a skilled activity and requires taking a decision on difficult events and important discussions on research in the social sciences (Arksey & Knight, 2011). Interviews are effective when the research theme involves issues that require multifaceted inquiring and thorough probing (Easwaramoorthy & Zarinpoush, 2006).

Interviews are classified into three types, namely structured, semi-structured, and unstructured. This study employed open ended interviews, which consist of an interview with guiding questions. The interviewer asks open-ended questions to start the conversation (Easwaramoorthy & Zarinpoush, 2006). The open-ended method is useful for participants to recount their experiences or when there is little information about a topic (Easwaramoorthy & Zarinpoush, 2006, p. 1). The researcher took every chance

to prompt further conversation with probing questions for clarity and in-depth understanding. From data collected through interviews and field notes, the researcher was able to compose a qualitative narrative of the participants' experiences with the KWA project.

Participants assisted in the snowball sampling by indicating eligible participants who were then contacted by the researcher. The recruitment process followed a recruitment text to the potential participant explaining the reason for the research and requesting a voluntary participation. After consenting to participate, participants were asked open ended questions. The interview was conducted in English. Participants' accounts of their experiences enabled a description of their opinions of reality, evoked by open-ended questions, and this facilitated the researcher to better reflect on the participants' behaviours and views (Baxter & Jack, 2008). The interview guide consisted of a maximum of 18 open-ended questions designed to examine the perspectives of key informants, community leaders, focus groups' participants, households' representatives, and project staff on the influence of the water project on the community. Interviews were audio recorded and continued for about 40-65 minutes. Data collected were transcribed immediately after the interview. The interviewees were categorised into various groups including key informants (experts, staff, and community leaders), households, and focus groups.

Key informants' interviews "are qualitative, in-depth interviews of 15 to 35 people selected for their first-hand knowledge about a topic of interest" (United States Agency for International Development, 1996, p. 1). IFAD (2011) underscored that a key informant is an expert who has the know-how and willingness to provide vital information and perspective on a specific theme. Key informants are used in research that "offers the researcher a great deal of flexibility in conceptualizing who is to be considered a key informant on the subject content being studied" (Delgado, 2011, p. 7). These interviews are an instrument used for a comprehensive appreciation of a qualitative problem and to develop proposals from key informants. A key informant interview may open up different themes or concepts that are yet to be examined (IFAD, 2011).

A key informant interview is similar to having a discussion with familiar people, permitting fluent discussions on opinions and knowledge. The interviews are usually semi-structured on certain issues to

be discussed. The researcher instantly formulates questions, probes for more discussion, and jots down notes to be explored after the interview (USAID, 1996). The advantage is that it delivers comprehensive, qualitative data to the project staff on the experiences and views of the interviewee. It can be a face to face interview, or over the telephone, and it can be informal or formally designed (World Heart Federation, 2016). In this study, the key informants interviewed had various backgrounds that enabled a holistic perspective of the KWA project. The first contact was made with the Mayor at the Kumbo Urban Council.

Focus group discussions were also used for data collection. According to Freitas, Oliveira, Jenkins, and Popjoy (1998), a focus group is a "type of in-depth interview accomplished in a group, whose meetings present characteristics defined with respect to the proposal, size, composition, and interview procedures" (p. 2). Communication in the group can facilitate the production of distinctive understandings of common experiences and social norms (Curry, Nembhard, & Bradley, 2009).

Data collection through focus groups is a popular method among researchers, irrespective of whether they possess the skills to thoroughly utilise the method (Delgado, 2011). Focus groups "bring tremendous value to a research undertaking, but if true to their principles, they are quite arduous to carry" (Delgado, 2011, p. 8). A focus group is applicable when it is aimed at exploring divergences in perceptions between groups or categories of the population or to expose issues that guide thoughts or attitudes (Krueger & Casey, 2000).

The Focus Group Discussions (FGD) interview guide was organised according to themes, bearing in mind that this approach would facilitate discussions, transcription, coding, and analysis. In this study, out of the five focus groups that were anticipated, two focus group (five partipants in each group) discussions were affected.

The entry point in the Kumbo community for the interviews was through the Senior Divisional Officer of Bui Division (the administrator of the area). An authorisation to conduct research was obtained and safety guaranteed by the authorities. The initial contact for the recruitment process started with a meeting with the KWA project staff. The objective and process of the study were detailed. The staff

consented to participate and identified other information-rich sources in the community. During the interviews, participants named other potential participants and this identification of participants by other participants was a continuous process. This process enabled the naming of information-rich cases and the snowball developed (Patton, 2002).

Key stakeholders actively involved in the project were interviewed. Key informants, community leaders, and focus groups were selected for this process. The process started with a distribution of an introductory letter that introduced the researcher, the study, and time needed for an interview. It also contained the researcher's contact number for interested participants to call and confirm their interest and availability. On the day of the interview, the participants were briefed on the process of an interview and what was required of them before signing the consent form. After each interview, the researcher expressed appreciation for participation and the recruitment procedure continued until achieving data saturation at a sample size of 26 participants including the focus groups. Upon completion of the interviews, recordings were transcribed verbatim.

### 3.3.3. Document review

Researchers often find it necessary to review documents such as newspapers, annual reports, correspondence, and minutes of meetings. Also, collecting research by reviewing documents is similar to observing or interviewing (Stake, 1995). Consequently, various documents including newspapers, annual reports, correspondence, and minutes of meetings were collected to supplement interview data collected. Documents were collected from stakeholders responsible for the project and newspapers were collected from the internet. 23 documents were reviewed, including 6 reports, 2 minutes of meetings and 15 local newspapers. Information from these documents were directly quoted in the analysis with an indication of the source.

## 3.4. Data analysis

This study used the thematic analysis approach for data analysis. Data were also analysed using the inductive and deductive approaches, which allow the discovery of themes, concepts, and propositions (Braun & Clarke, 2006). Gray (2004) explained that "deduction begins with a universal view of a situation

and works back to the particulars; in contrast, induction moves from fragmentary details to a connected view of a situation" (p. 16). Gray (2004) further explained that the inductive and deductive processes are congruent, and the inductive approach is used for data collection where the data is later examined to determine if there are new relationships between variables. Data gathered during interviews or observational studies are required to be precisely explained. These data collected may have propositions for policy and practice or clarifications from previous findings (Lacey & Luff, 2009). Data analysis is "an interactive process, where data are systematically searched and analysed in order to provide an illuminating description of phenomena" (Noble & Smith, 2014, p. 2). Qualitative analysis means "organizing and interrogating data in ways that allow researchers to see patterns, identify themes, discover relationships, develop explanations, make interpretations, mount critiques, or generate theories. It often involves 'synthesis, evaluation, interpretation, categorization, hypothesizing, comparison, and pattern finding'" (Hatch, 2002, p. 148).

Although there are various qualitative methods, the ensuing analysis is grounded on standards including transliterating the interviews, plunging oneself inside the data to expand understandings of the phenomena under study, initiating a data coding mechanism, and relating codes or units of data to develop main ideas and theories (Morse & Rihanrds, 2002). Researchers use their skills to research settings, participants, and documents to explain their data (Taylor & Bogdan, 1998).

It has been documented that some of the approaches used for analysing qualitative data include; the sociolinguistic approaches which examine the meaning of languages, and content and thematic analysis methods which understand participants' perspectives (Smith & Firth, 2011; Noble & Smith, 2014). Researchers, through reflections and experiences, identify the method for data analysis (Stake, 1995).

### 3.4.1. The thematic approach

Thematic analyses classify and describe themes distinctly and clearly. It is when "codes are then typically developed to represent the identified themes and applied or linked to raw data as summary markers for later analysis" (Guest, MacQueen, & Namey, 2014, p. 9). The process of thematic content

analysis consists of classifying ideas and groupings arising from the data (Burnard, Gill, Stewart, Treasure, & Chadwick, 2008). This consists of uncovering ideas in the interview texts and trying to authenticate, substantiate, and qualify them by examining the data and re-examining to find additional themes and categories (Pope, Ziebland, & Mays, 1999). Milne and Oberle (2005) asserted that judicious analysis of coding is a continuous process because "data collection and analysis occur simultaneously in qualitative research; new codes continue to emerge that requires a re-examination of existing ones" (p. 417). Thematic analysis is applicable to the inductive and deductive approaches (Alhojailan, 2012). The inductive and deductive data analysis approaches consist of three key stages: preparation, organization, and reporting of results (Elo, Kääriäinen, Kanste, Pölkki, Utriainen, & Kyngäs, 2014).

The qualitative data analysis software was used to support data management and analysing data in this study. Usually, NVivo and NUD*IST are "widely used because they have a sophisticated code and retrieve functions and modeling capabilities, which speed up the process of managing large data sets and data retrieval" (Noble & Smith, 2014, p. 2). This researcher employed the NVivo software.

Subsequently, the interviews were transcribed, anonymised, and organised in detached documents; the coding process was done and data was classified or regrouped in themes. The thematic analysis process started with manually coding the transcribed data for the development of themes and sub-themes. Because different codes were often created, a codebook was compiled to document all developing codes. The NVivo11 software was later used to revise the data. It was used to manage, organise, and deduce the meaning of unstructured data collected during fieldwork. Bazeley (2008) defined NVivo as a "software package to assist in the management and analysis of qualitative data" (p. 1). NVivo software is used in qualitative data analysis because much is obtained from the software and saves valuable time (Bazeley, 2008). NVivo software is "usefully able to analyse qualitative data in terms of gathering all the evidence and subsequently organising and grouping it into similar themes or ideas" (Alhojailan, 2012, p. 39). The software is effective in analysing qualitative data by enhancing the accuracies of the logical approaches in authenticating the ideas that do not influence the researcher's opinion of the data. Also, the tool enables the researcher to be precise with the data analysis (Alhojailan,

2012). The software is able to quantify duplications and hyperlinks ascribed to the data. Also, the logical methods can be plotted and traced; and relationships through the data pictured, which is important for the development of theory (Noble & Smith, 2014).

NVivo software does not perform data interpretation for the researcher; instead, the software is used as a set of tools for envisaging the kind of connections between codes, permitting the researcher to come up with deductions (Gibbs, 2008). Consequently, the coded data was entered from the interviews into NVivo, which enabled the development of emerging themes, distinguishing of emerging categories, and organising of the themes into these categories.

Open coding was initiated to identify recurrent themes and categories. The initial themes were linked to the study's focus during the interview. The sub-themes were associated with specific ideas in the initial themes. Despite the fact that the initial themes differ comparatively, there were substantial sub-themes that were interwoven. It is worthy to note that in spite of this data-driven inductive approach, a number of the recurrent patterns among answers only substantiate the concepts suggested by the literature.

This notwithstanding, complications can occur with the software and some programs may not work well with the ordinary text format. Also, massive coding and categorisation can lead to uncontrollable data, and researcher imagining on the screen can impede conception of the data (Noble & Smith, 2014).

### 3.4.2. Substantiating credibility in the qualitative study

The principles employed in this study to ensure rigor of qualitative research include credibility, transferability, dependability, and confirmability (Guba & Lincoln, 1994; Rambaree, 2007). Qualitative research is usually described as the "poor cousin" to well-established research methods (Milne & Oberle, 2005). Therefore, demonstrating the thoroughness of research methods is important for qualitative researchers (Rose & Webb, 1998; Sharts-Hopko, 2002). By being able to explain the whole research process, the researcher justifies the results are correct and constructive (Morse, 1991; Streubert & Carpenter 1999).

Rose and Webb (2005) corroborated that "asserting that a method of data analysis was helpful is not, however, sufficient to demonstrate that findings so generated are trustworthy; it is crucial to show that the method employed was rigorous" (p. 560). Anney (2014) noted that the length of time spent in the field enables the researcher to comprehend the main problems that could influence the quality of the research as it builds confidence with study participants.

Qualitative researchers employ various methods to demonstrate the reliability of their research, such as asking clear research questions, selecting a suitable case study design, employing purposeful sampling strategies, and triangulating data sources (Baxter & Jack, 2008). However, the principles for rigidity vary from one researcher or study to another; therefore, decisions must be according to the methodological, theoretical, and philosophical foundations of the research (Emden & Sandelowski, 1999).

In this study, processes that "promoted the overall integrity of the study included consistent reflection on potential sources of bias, specifically on the dual role of the researcher, respondent validation, and peer review" (Milne & Oberle, 2005, p. 481).

### 3.4.3. Transferability

Transferability is considered the foundation of a study focused on the participant's experience (Sharts-Hopko, 2002). Transferability is defined as the "degree to which the results of qualitative research can be transferred to other contexts with other respondents" (Anney, 2014, p. 277). Qualitative study is not aimed at generalizability, which presumes that all perspectives theoretically add to the understanding of human experience. Rather, generalisation in qualitative studies offers a rich and contextualized apprehension of the human condition by the rigor employed in specific cases (Polit & Beck, 2010). Transferability is used to determine at what level the results of the research can be employed in other settings (Byrne, 2001).

Qualitative research is not about the truth. It is about producing an understanding of a subject of interest. Its objective is to explain and appreciate the description of experience mirrored in the participants by being thorough in the research and working on a continuous basis with regards to the setting (Bryman, 1996). Participants' "lived experience and its context need to be described adequately for those reading

or hearing the study report to evaluate how the findings apply to their own situations" (Sharts-Hopko, 2002, p. 59). In this case, the researcher is required to provide a comprehensive explanation that enables the audience to make conclusions about generalising the results to other situations. Therefore, transferability is determined by the readers and consumers of research (Polit & Beck, 2010).

This study developed the likelihood of transferability by applying a suitable sampling approach and engaging equal representation from each studied group. A comprehensive description of the case study allows the readers and research consumers to decide whether or not this work will transfer to other settings. Also, the detailed description of the research methods, along with an effective analysis, will enable readers to decide whether the results of the study can be transferred to a different setting. Application of the NVivo software goes further to demonstrate the rigor applied in validating this study.

Knowledge will be translated through publication of the results, workshop with the Kumbo community and conferences on community water management in resource poor countries.

**3.4.4. Credibility or dependability**

Credibility focuses on the trustworthiness of the research. Ulin, Robinson, and Tolley (2005) refer to credibility as the "confidence in the truth of the findings, including an accurate understanding of the context" (p. 25). Credibility determines whether or not the results of the study embody credible data that reflect participants' original data, and it is a precise analysis of the participants' initial perspectives (Lincoln & Guba, 1985). One element that ensures credibility is the period of time the researcher is involved with the study participants (Sharts-Hopko, 2002; Cope, 2014). Byrne (2001) noted that determining the credibility of a study approach is done through many approaches integrated into data collection and analysis. This method enables the verification of a series of procedures for different researchers to assess the authentication of data, methods, decisions, and findings (Tobin & Begley, 2004).

Dependability refers to "whether the research process is consistent and carried out carefully according to the rules and conventions of qualitative methodology" (Ulin, Robinson, & Tolley, 2005, p. 26). According to Bitsch (2005), referred dependability is considered the strength of the research results in due course. Bernard (2006) asserted that "nothing in research is more important than validity" (p. 53).

Guest et al. (2012) considered what would happen if the data collected, analysed, and interpreted do not correctly and reliably epitomise what a researcher expects or implies. It is the responsibility of the researchers to make certain that the analytical method of research and a well-defined theme is accomplished (Schwandt, 2001). This study used field notes and data gathered in the analysis, and self-effacing description of the research process was ensured.

### 3.4.5. Confirmability or audibility

Confirmability refers to "the degree to which findings are determined by the respondents and conditions of the inquiry and not by the biases, motivations, interests or perspectives of the inquirer" (Lincoln & Guba, 1985, p. 290). It is the extent to which the researcher's analysis could be authenticated or substantiated by different researchers (Baxter & Eyles, 1997). It focuses on the "adequacy of information reported, from the research question and protocol for data collection through the raw data, through various stages of the analysis of data to the interpretation of findings" (Sharts-Hopko, 2002, p. 85). Confirmability is "concerned with establishing that data and interpretations of the findings are not figments of the inquirer's imagination, but are clearly derived from the data" (Tobin & Begley, 2004, p. 392). Confirmability of findings in this study was done by enabling participants to recount their experiences, values, and beliefs with no limitation. It included the audit trail, which consists of:

> raw data in all forms; the data reduction and analysis products including field notes, summaries, quantitative summaries, and theoretical notes; data reconstruction and synthesis products including the structure of categories, findings and conclusions, and a final report that connects the existing literature to emergent concepts, relationships, and interpretations; process notes; materials relating to intentions and dispositions including the study proposal and the investigator's journal; and instrument development information (Lincoln & Guba, 1985, pp. 319-320).

Transcripts were given to participants who indicated the need to confirm the data. The researcher examined the reliability of transcribed data with focus group discussions providing feedback. Integration of field notes was an important part of the data analysis process. The study also demonstrated well-founded conclusions and interpretation, and rich quotes from data collected were included in the analysis and portray each developing subject (Cope, 2014).

### 3.5. Ethical considerations

As a researcher, one has an obligation to the research participants, colleagues, and institutions involved in the study, and the general public (Patton & Cochran, 2002). Therefore, research must be conducted with the necessary supervision. In this way, study participants can be saved from harm by a self-governing research institution. It also secures the researcher and confirms research; additionally, it safeguards the institutions concerned in the study as it assures them that their resources are used judiciously (George, 2016). In general, the whole research process is confirmed, and the readers and consumers of research are assured that the study is rigorous. It is, therefore, an obligation that ethical approval is in place, and "carrying out research without appropriate approval can have serious repercussions on a career in medicine, including removal from the medical register" (George, 2016, p. 615).

Prior to the beginning of the study, a provisional ethics approval was obtained from the University of Ottawa's Health Sciences Research Ethics Board (REB) until ethics approval was obtained from the research setting, the Catholic University of Bamenda, which is responsible for ethics approval for research in the North West Province of Cameroon. Final ethics approval was issued by the University of Ottawa (REB) subsequently. An authorisation was also obtained from the Senior Divisional Office of Bui Division to conduct research in his jurisdiction. The corroborations of the council, traditional leader, and authorities of the KWA project were received before research was initiated.

The policies of the international bioethics standards were respected by getting informed consent, making certain of anonymity, not involving participants who are predisposed, verifying cost-benefit ratio, respecting the themes, promising participants that it is their right to withdraw at any point in the study, using protective project material, and disclosing any study threat. All participants in this study were debriefed on the aims of the research and given informed consent forms for their signatures before the interview. Participants were informed that participation was on a voluntary basis and could be withdrawn at any time if they felt uncomfortable. They were also informed that they were not obligated to answer all

the questions, and they could request that their interview should not be taped. They were informed when the interview would be audiotaped and consents were obtained.

In order to provide the confidentiality of the data, participants were assigned pseudo codes and these were attributed to all the audiotapes and interview transcript data. The data were put into a well-protected locker. According to Patton and Cochran (2002), "the identity of the participants must be protected at all times and not be left lying around in notebook" (p. 5). Transcriptions stored in the computer and other research-related documents were password protected. All hard copies of documents related to the study have been kept in a secured locker and will be handed over to the researcher's supervisor's office at the University of Ottawa for storage after the study. These documents will be stored for five years and shredded by the supervisor, as stipulated by the University of Ottawa policies.

This research fully disclosed and has referenced all information authored by other persons. Questions designed for the research did not carry any humiliating words that brought uncomfortable feelings. The questions were tailored to address only the topic under investigation and no personal information was required. Distortion, falsehood, and misconception of data were not warranted.

**3.6 The Conceptual Framework**

A conceptual framework is a graphical or written presentation, one that "explains, either graphically or in narrative form, the main things to be studied - the key factors, concepts, or variables - and the presumed relationships among them" (Miles & Huberman, 1994, p. 18). To give a picture of how this study explored the Kumbo water project, a conceptual frame visualizing the link between governance of the project and the impact the project could have on the lives/health of the population was used.

The importance of governance reflected in the framework draws inspiration from a study by Greer et al., (2016) on strengthening health systems governance, which states that good health policies often produce unintended effects, or fall prey of corruption and ineptitude or are badly executed due to political problems, financial problems or sometimes just problems in the way things are done – problems of governance. Accessibility to water is an important health component in the livelihood of the population. To provide potable water that will reduce and or eliminate the occurrence of water-borne diseases

(diarrheal diseases) in the Kumbo population, this study visualized the impact of stakeholders involved in the Kumbo water project, and the financial resources available for the management and sustainability of the project.

Greer et al., (2016) also outlines that governance is a great challenge to weave a web of actors, such as social insurance funds, professions, agencies, governments at different levels, NGOs, and even private companies, who are capable of formulating and accepting a direction, aligning their efforts, and then carrying out their duties. They further state that governance problems include corruption, misaligned incentives, regulatory capture, unintended effects of badly thought through policies, nepotism, incompetence, lack of trust and difficulties with long-term planning (Greer et al., 2016). Greer and colleagues concluded that the governance of any project (including the Kumbo water project) has five key attributes: (1) accountability; (2) transparency; (3) participation of affected interests; (4) integrity; and (5) policy capacity. None sustainability or any other problem faced by a project can be traced to one or more of these attributes. The framework for this study (Figure 2) below, shows how these attributes could potentially influence the Kumbo water project.

The influence of the KWA project can as well be classified as direct and indirect. The direct influence consists of immediate health, social and economic benefits to the population in terms of improvement in quality of life and low prevalence of water-borne diseases while indirect effects include individuals and collective socioeconomic influences arising from employment offered to individual members of the population by the project. Also, the indirect effects can follow instantaneously as well as deferred and influence the physical, social, and economic situation of the community rather than directly on the individuals themselves.

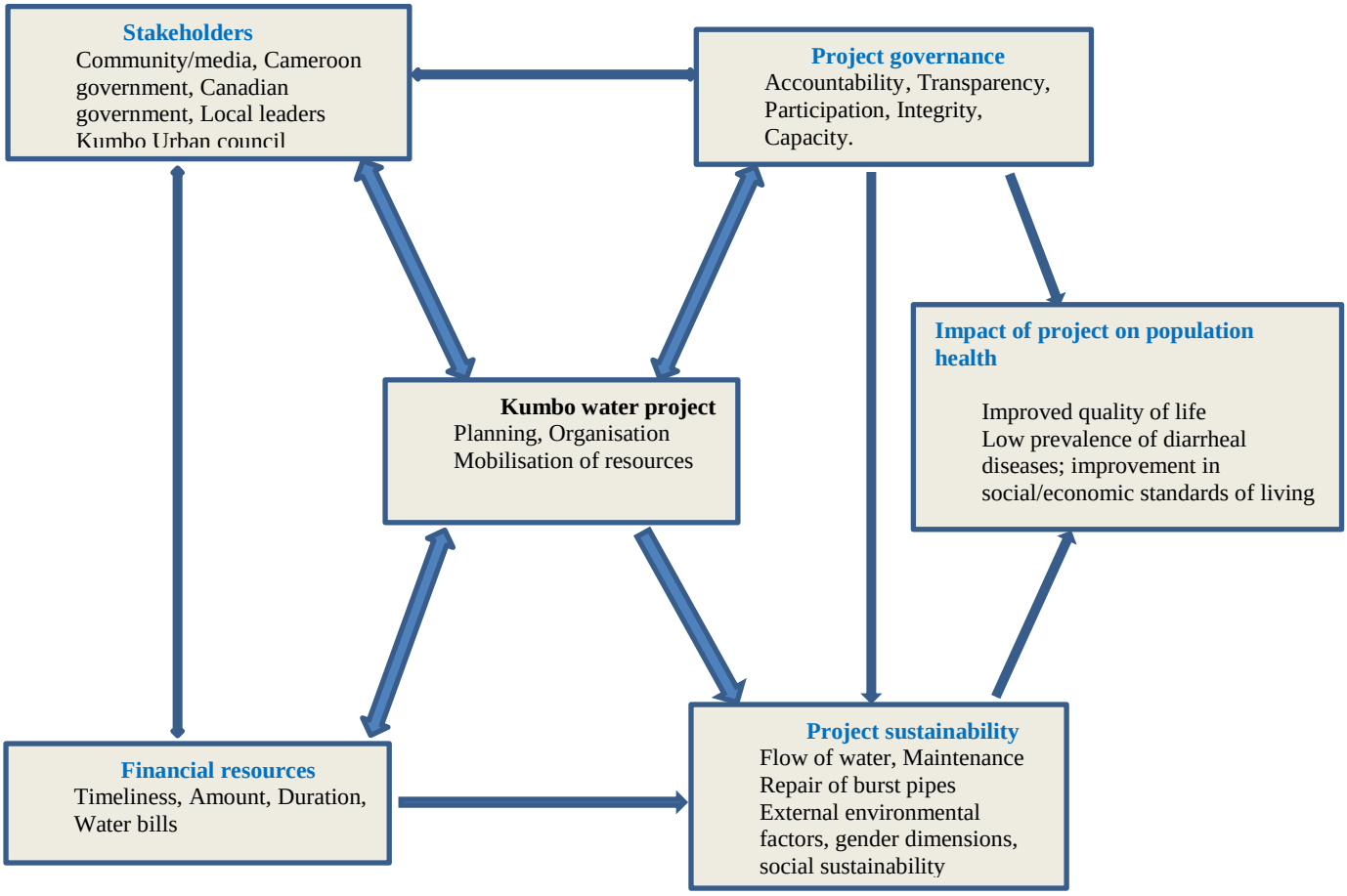


*Figure 3:* Conceptual framework for analysis Kumbo potable water for the analysis of the Kumbo water project

### 3.7. Summary

This chapter described the research design, setting of the study, data collection methods and data analysis procedures. It further described the importance of each procedure or process. However, the qualitative research design is not void of limitation. The significance of qualitative research has come under criticism after many years of extensive use (Hammersley, 2007). Milne and Oberle (2005) explained that the guidelines for assessing qualitative studies have been controversial in recent years. Much has been argued on the fact that qualitative research is founded on various theories with unique objectives (Milne & Oberle, 2005). Some have argued that qualitative research has poor guidelines, especially the absence of valued principles in assessing it. Others have called for the need to clarify assessment guidelines, and it is assumed that "unless researchers operate on the basis of such criteria, their work will be of poor quality" (Hammersley, 2007, p. 287).

The main discussion now pivots on the question of validity. Exponents of positivist quantitative research believed that qualitative, especially interpretivist, methods to human inquiry are marred with risks to validity which questions the scientific worth of the research (Angen, 2000). But "varying philosophical and theoretical orientations to qualitative inquiry remind us that issues of quality and credibility intersect with the audience and intended research purposes" (Patton, 1999, p. 1). These situations are echoed in interviews that resulted partially in individually influenced responses. Discussion on the KWA project was a very sensitive issue in Kumbo at the time of data collection. This influenced the responses provided by participants and therefore allows for questioning the reliability of the information provided.

# Chapter 4: Findings

## Stakeholders' Involvement

The findings for this study have been categorised into four major separate chapters (stakeholders' involvement, sustainability of the water project, social and economic benefits of the project and discussions). The main theme in chapter four is the stakeholder involvement relevant to the research question on how stakeholders' involvement guided the social and economic livelihood of the people in the Kumbo community. Stakeholders included: Cameroon and Canadian governments, the Kumbo Urban Council, the Paramount Chief, and the community. The interviews were conducted to elicit the perspectives of the participants about their water project as it has been under-researched. Crucial to their point of view is the particular history of the project, which influences their past and current involvement. Thus, this chapter starts with the history of the project in order to better contextualise understanding of the crisis the project is currently facing. For easy understanding of the history, a timeline has been charted. The chapter ends with a summary of the key elements of the research question. The findings are also presented in chapters 5 and 6.

### 4.1. Participants' perspective on the history of the project

The history of the project was a recurring theme in participants' responses. The in-depth history was embedded in the explanation of the roles stakeholders played in the initiation, implementation, and management of the water scheme. Looking at the historical perspective of the water scheme was very useful, and offered great insights into the current issues. Without the in-depth history, the experiences of these participants will be underestimated.

#### 4.1.1. The Kumbo water project timeline

For purposes of easy understanding regarding the events of the Kumbo water project enduring over six decades, a timeline has been included. It will help guide understanding of the dates through what is a very complex and ever-changing cast of characters/organisations and government agencies. The Gnatt-chart below provides a timeline of various events and dates of occurrents in the period 1960-2016.

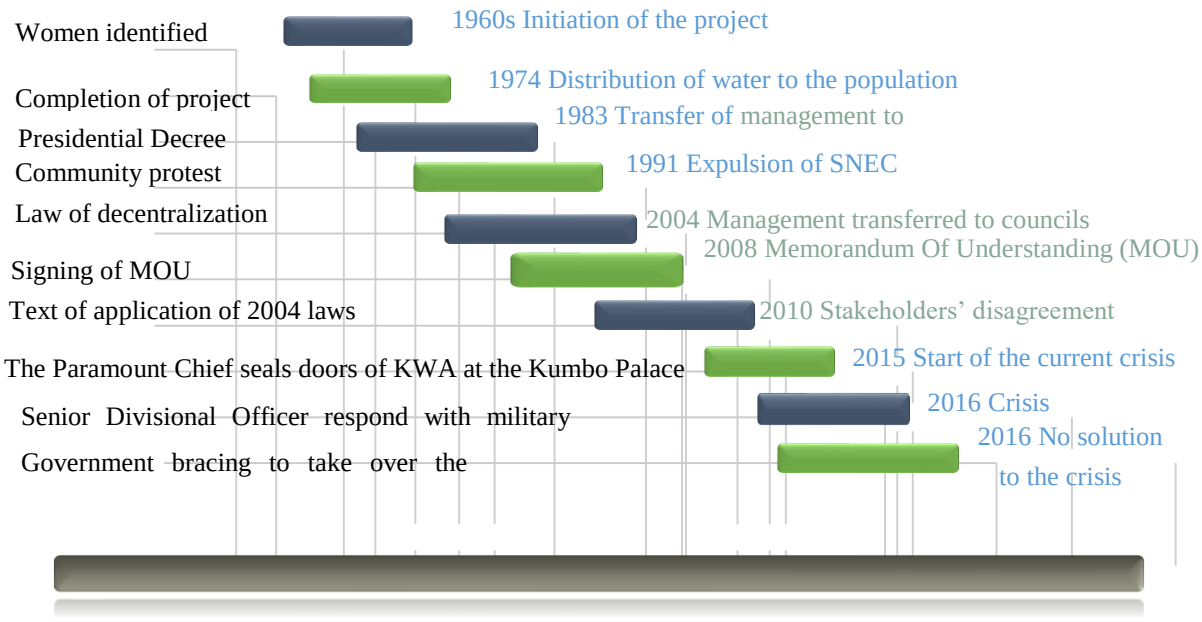


Figure 4: Timeline of the Kumbo water project (Gantt-chart)

One community leader of the Kumbo community recounted that Kumbo was established at the end of the eighteenth century when the people migrated from Kovifem, where they lived for decades. As the population increased in the newly settled area, the need for potable water became evident. Bernard Fonlon, an elite of the Kumbo community and Cameroon Federal Deputy Minister for Foreign Affairs in 1964, spearheaded the provision of potable water when he visited a women's group called the "women of fourteen" in Kumbo. A review of the *Newspaper of the National Bishops' Conference of Cameroon* of August 31, 2006, revealed that:

> the Nso water scheme was the initiative of and a priceless legacy to the Nso people from the Nso illustrious son, of blessed memory, Professor Bernard Nsokika Fonlon, who got the assistance from the Canadian government, based on his personal friendship with the Canadian Prime Minister at that time

One community leader narrated that in the 1960s, when the need for potable water became severe, Fonlon used his proximity to the former Cameroon President Amadou Ahijo to lobby for clean water for the Kumbo community. Meanwhile, he also presented the problem to the former Prime Minister of Canada, Pierre Elliot Trudeau, his personal friend and former classmate. A report on the Kumbo Water Authority crisis of September 11, 2015, described the details of Dr. Fonlon's influence in the initiation of

the project. The introduction of the project to the Canadian Prime Minister took place in 1968 when President Amadou Ahijo visited Canada on a state mission. During this visit, an application was submitted for assistance to support the project.

After the Kumbo water project was presented to Prime Minister Trudeau, the Canadian Foreign Office and the Canadian Agency for Foreign Assistance expressed concern about the water situation and indicated their willingness to help. As one teacher observed, "Kumbo Water Authority is born out of the generosity of the Canadians" (P 4). One legal adviser narrated:

> so, it happened that Ahijo had to visit Canada at that time when he was already working on the project. So, when they went to Canada it was one of the projects he was going to table to his Canadian friends. So, when he went with Ahidjo as a translator, he made sure he finalised the arrangements for the water as the government of Canada was desirous to help. This is because when he went there and gave lectures in the university where he studied, the people there asked 'such a man from Africa, what is it we can give you?' and he quickly said; water! (P 21).

In 1969, the Kumbo water project was approved by the Canadian Agency for Foreign Assistance for immediate implementation, and an agreement was made between the two governments. The Canadian government funded the project with material and technical support, while the Cameroon government waived customs duties and transported the material to the Kumbo community. The collaboration between Fonlon and Trudeau initiated a diplomatic relationship between the government of Canada and the Kumbo community that resulted in the Kumbo water project.

### 4.1.2. The Yeh saga

In 1972, the water scheme was completed but not actually delivering water to the community. Minutes from a water supply meeting in 1974 explained that a critical project requirement had not been fulfilled and prevented the distribution of water to the entire population. The people living in the catchment area of River Kinsani had to evacuate for water to be distributed to the population. The governor at that time reiterated the importance of the water scheme and appealed for people in the area to evacuate so that the water scheme could be enjoyed by the population. The population defied the appeal and continued constructing houses and contaminating the water. There were continuous activities around the catchment area. The report on the Kumbo Water Authority crisis of September 25, 2015, indicated that:

> the governor pointed out that it had been noticed that their opposition was quite firm about the project because instead of packing their property and leaving the area they have continued to erect new houses and undertake new projects. Added to this, they have been cultivating new farms not only near the rivers but also where the water is tapped, and worst of all, the Governor went on, it has been noticed still that many people in this area suffer from water-borne diseases such as dysentery etc., whereas many of these diseases would have been avoided if the new water supply system was functioning.

Interview participants explained that the Yeh population resisted the relocation request because the people had a deep attachment to the area. It was where they were born and raised, and where their forefathers were buried. Where they had most of their property and assets. Despite the fact that the Governor fully understood their situation, he ordered the Yeh people to evacuate from the area because there were 40,000 people waiting to benefit from the project as opposed to 2000 people living in Yeh village. The minutes of a Nso water supply meeting of March 3, 1974, referred to the former Governor's speech citing that:

> although he knew the inconveniences, it is regrettable that what was uppermost in his mind at that time was the lives of the 40,000 inhabitants facing a serious water problem in an over increasing population of Kumbo. He then said that if the people of Yeh had been immune to the diseases of dysentery, that is not the case with those at Kimbo.

The *Newspaper National Bishops' Conference of Cameroon* of November 4, 2011, revealed that although the Yeh community was located at the source of the Kumbo water supply, villagers had had no access to potable water for more than four decades and observed that: "providing treated water to the Yeh community will ensure better health to the locals". The minutes of the Nso water supply meeting from March 1974 noted that the Governor offered water access points and fountains in the new area where the Yeh people were to be resettled. But the people of Yeh were dissatisfied and argued that water was not the ultimate solution to more widespread problems, including a shortage of schools and health institutions in the area as well as poor road access. However, the Governor promised the Yeh people some financial compensation after they settled in the new area. This was the first stage of conflict within the water scheme since its initiation.

The Yeh people were asked to evacuate the area to avoid contamination of the water and ensure purity of the water scheme. This action resulted in anger between the Yeh people, the Paramount Chief,

and the government, provoking a series of court cases against the Paramount Chief and the Cameroon government. The report on the Kumbo Water Authority water crisis of September 11, 2015, explained that because the Yeh people found it difficult to relocate, the Senior Divisional Officer and the Paramount Chief organised forceful evacuation using the forces of law and order and Nwerong (sacred society). This enraged the people of Yeh, causing most of them to migrate to Nigeria and to other places.

During the Yeh crisis, politicians influenced the Yeh people to believe that they were victims of a larger plot. The report of the Kumbo Water Authority water crisis from September 11, 2015, noted that "political intoxication undertaken by politicians came into play to mislead the people of Yeh that they were being unnecessarily victimized and that their presence could not affect the water intake. This made the people believe that they were being persecuted". The consequences of relocating the Yeh people were far-reaching as many court cases ensued with the Yeh people demanding compensation from the government. Calm was restored when the Kumbo council intervened, provided the Yeh people potable water and made the road to the community accessible. Furthermore, the minutes of a meeting with the Governor of March 3, 1974, explained that the evacuation of Yeh village was imperative because the area had experienced many deaths from dysentery. It was also revealed in the minutes that the Yeh people refuted medical officers' opinions that their water source was contaminated with dysentery even though they had been educated that dysentery is caused by contaminated water.

In 1972, when the Yeh people evacuated the catchment area, the report on the Kumbo Water Authority water crisis of September 11, 2015, revealed that distribution of the potable water to the Kumbo population started. During this time, the scheme was managed by the Department of Public Works, in the Ministry of Mines and Power. The ministry improved the water scheme by constructing a sedimentary tank, substituting the raw water main line from the intake to the treatment station, and creating a new distribution main line from the treatment plant to Mbveh. A community leader explained that the Department of Public Works ran the Kumbo water project as soon as it became operational. Later in 1972, the management shifted to the Department of Urban Development. And in May 1972, after the referendum in Cameroon, the Ministry of Mines, Water, and Power started managing water schemes in West

Cameroon including the Kumbo Water Authority.

The interaction of multiple stakeholders from the beginning of the project was an indication of future water conflicts. The relocation of the Yeh people was a strategy to protect the catchment area from further farming and contamination of the water. But this seemed to be a temporal solution, as the Yeh people were gradually returning and carrying out farming activities and destroying the water-friendly trees planted around the catchment area. The fact that they were forcefully relocated using the forces of law and order was arduous to the Yeh people, who had a heritage in this area and were unwilling to give it up. On the other hand, the relocation of these people was necessary for the sustainability of the water scheme, which will be discussed in the next chapter.

### 4.1.3. The SNEC chronicle

The scheme was successfully managed by the Ministry of Mines, Water, and Power until it was handed over to the Cameroon Nation Water Corporation (French abbreviation SNEC) in 1972. However, power struggles and ownership claims among stakeholders came into play in the second phase of the conflict, which began with this shift in management to the SNEC. The now-defunct state-owned cooperation ran the water project until it was later handed over to the KWA.

The chart below provides a pictorial presentation of the Kumbo water structure after the SNEC and the singing of MOU (The Memorandum Of Understanding). It gives an idea of the complex network of the stakeholders and their roles that led to the management crisis of the Kumbo water.

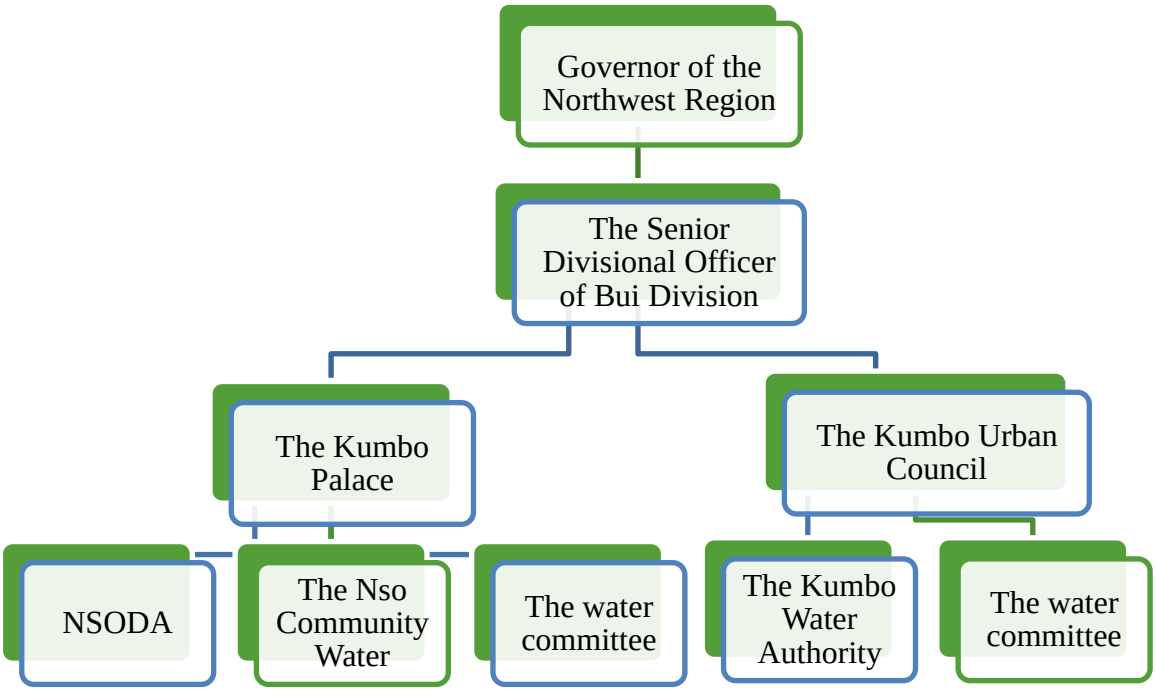


*Figure 4: Kumbo water structure after the MOU and during the management crisis*

A report of March 2015 on the challenges in the Kumbo community to improve water supply management explained that "in 1984, a presidential decree institutionalised state operation of all urban water supply systems under the then SNEC". However, this management model was problematic for the community because of the alienation of the Kumbo people from the SNEC management structure, raised water rates, and instituted fees for access to public taps. SNEC management of the scheme resulted in so much discontent among the Kumbo population that it led to a second major water crisis involving community conflict over the current crisis. As a result, in 1991, the Kumbo population took advantage of the political upheavals in Cameroon and organised a smear campaign against the SNEC that resulted in its eviction from Kumbo in October of that year.

The crisis originated from the women in Kumbo (a group named "women of fourteen") who considered themselves the initiators of the water scheme, and who were outraged and protested against the transfer of the management of the scheme to the SNEC. They were not ready to risk the scheme and return to the days of the 1960s where they had to scramble over water collection. Despite the women's protest, the SNEC continued to manage the Kumbo water scheme.

In 1972, the management of the SNEC introduced high fees for use of public taps, which was to be paid by the Kumbo Urban Council—prior to this, the use of public taps was free. It was also purported by the majority of the Kumbo elites that the bills far exceeded the council's budget. As a result of the council's inability to pay the SNEC, 50 out of a total of 62 public taps were closed by the SNEC in 1991. Incapable of paying the fees for the 12 remaining public taps, the SNEC closed all the taps in 1991 and the community was left with no public taps. This led to an explosive situation in that same year. A report on the Kumbo water project of September 25, 2015 noted that "an attempt by the country's defunct water corporation, SNEC to take over attracted a violent reaction from the population whereby the office of the company was shattered. Since then, the management of drinking water in Kumbo has been controversial". Due to the political turmoil and civil disobedience in Cameroon at that time, the Cameroon government reacted with the use of force. Enraged by the government's extreme and violent response to public protests, groups of Kumbo youth attacked and took over the SNEC installations and chased out the SNEC workers.

The government, taking the side of the SNEC, responded by sending the military into the city of Kumbo. A local newspaper (Blows the Whistle on SWELA of 1992) reporting on the Anglophone problem reported that the Paramount Chief (Fon Ngah Bifon III) stated: "if the government prefers to respond with guns which we do not have, we will prefer to lose this most cherished gift. We rather not have water than have SNEC". For a long time, water was not available, and it seemed the water was blocked and wasted by the military. One of the local technicians was reported by the local newspaper (Blows the Whistle on SWELA) to have been arrested, tortured, and later hospitalised.

As a result of this unrest, in 1992, the government and the SNEC withdrew from the management of the Kumbo water scheme and reassigned the management of the scheme to the community. Interview participants recalled that the SNEC authorities left and management of the water project was reverted to the palace.

The protest from the women and the youth resulted from the belief that the Kumbo people identified the project, initiated and provided labour and financial contributions. Additionally, the protest was based on the fact that funding for the water was an initiative of the Nso elite (Fonlon).

Therefore, the community owned the project and not the government. The involvement of the government and the transfer of the management of the water scheme to the SNEC was regarded by the population as a deceitful and subversive act by the government on the community. Since then, the confusion over who owns and controls the distribution of the water supply in Kumbo is far from over. It became clear that the history of the project, ownership claims, and the involvement of multiple stakeholders is playing a huge role in the destabilisation of the water scheme, hence, unfavourable for the livelihood of the population. The diagram below helps the understanding of stakeholders' interactions.

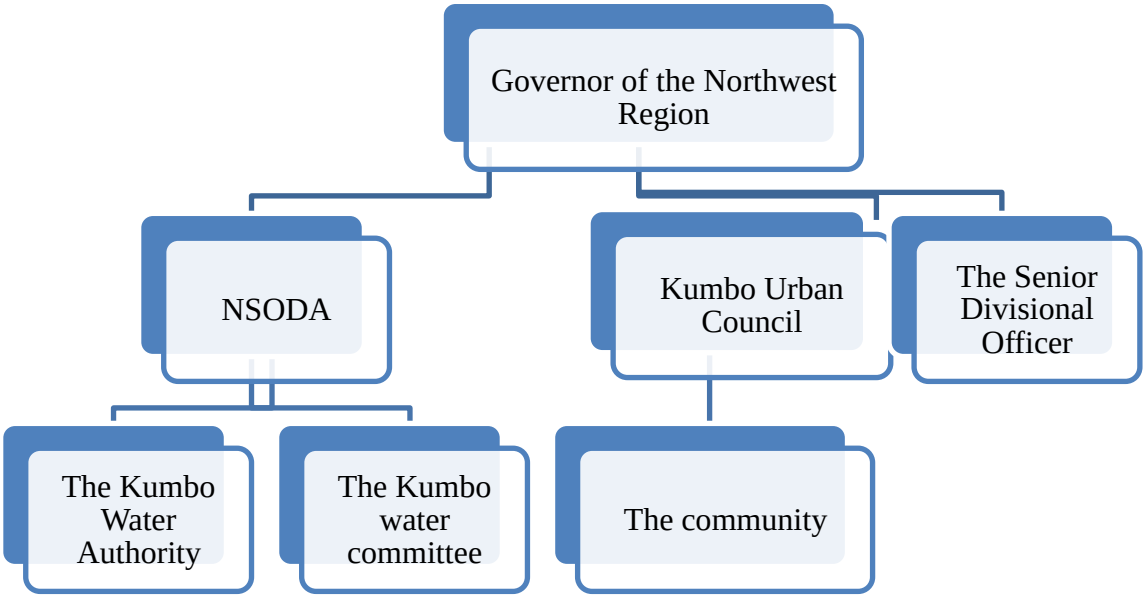


Figure 6: Kumbo water structure after the SNEC

### 4.1.4. The Memorandum of Understanding (MOU)

The third stage of the crisis involved a power struggle between two of the major stakeholders: the Kumbo community and the Kumbo Urban Council. The report on the Kumbo water crisis described the aftermath of the withdrawal of the SNEC.

At the end of 1992, the Kumbo community came together after the departure of the SNEC and resolved that the Nso Development and Cultural Association (NSODA) take over the management of the Kumbo water scheme. Through the NSODA, the Kumbo Water Authority was initiated locally and given the responsibility to maintain all structures and installations related to the water scheme as well as water quality. The intention was to give the management committee (KWA) a legal structure.

However, the KWA was unsuccessful in resolving issues surrounding the scheme due to the absence of a legal framework to guide its operations, as was revealed in a report on the Kumbo Water Authority crisis of September 11, 2015, — the KWA had issues of legitimacy, under the national legislation for water management. In order to solve the legal issue, required by Cameroon law, a water conference was summoned at the end of 1992. The conference produced a constitution meant to legalise the KWA but which failed to act as the legal framework required for a smooth functioning of the scheme. Further, the legal status of the KWA was required to solicit for external funding. In 1994, a committee of 12 members was appointed by the NSODA to produce a draft constitution to be used by the Association and the KWA, which was adopted that same year by the entire Nso community. The KWA became an organ under the supervision of the NSODA. Again, however, this management structure did not resolve the problem of the legal framework the community needed for the smooth functioning of the scheme because it had to be attached to a government structure for legitimacy.

With the enactment of the 2004 decentralisation laws that gave the responsibility of managing the water supply to municipal councils, the Paramount Chief attempted another strategy, integrating the new law into the legal framework the community had been working on. *The Median* news of August 10, 2015, revealed that the “Kumbo Council is also acting within the precincts of the 2004 decentralization laws which give the council the supervisory power over water schemes”. To this end, in 2008, a Memorandum of Understanding (MOU) was contracted between the Paramount Chief, the NSODA, and the Kumbo Urban Council to formalise the legal status of the KWA and assigning it supervisory powers over the water scheme as well as responsibility for locating external funding. A report from the KWA to the Kumbo council revealed that:

> the Kumbo Water Authority's network completed in 1974 was now over 30 years of age and that to ensure continued satisfactory performance would require new huge investments in replacements of pipes, valves, new storage tanks and extensions of the network, it shall be necessary to seek external assistance which the KWA can only have access to if such application is sponsored by the council.

The need for locating external assistance was the key argument that convinced the stakeholders to undertake the agreement (MOU). In 2008, the new status of the KWA was submitted to the Kumbo Urban Council, discussed and adopted. The NSODA and the Paramount Chief remained members of the board and ex-officio members of the General Assembly. However, the MOU would later become a source of controversy and mistrust among key stakeholders in the Kumbo water project. Meanwhile, the Memorandum was intended to assign the KWA to the Council as a supervisory authority.

The signing of the Memorandum of Understanding brought about the third major crisis that plagued the Kumbo water scheme. The following are the arguments of the main stakeholders. The NSODA argued that even though the KWA was now an entity under the supervision of the Kumbo Urban Council, the Memorandum stated that "the KWA is not a department in the council. It is a structure that has administrative and financial autonomy. The council is a watchdog that guarantees the respect of norms, the rule of law, and respect of the rules and regulations of KWA". A legal adviser from the community familiar with the Cameroon 2004 law of decentralisation alleged that:

> since there was a lot of money, the council was interested in managing the water. And they took over management immediately after the 2004 laws. Now the decree of application came in February 2010; a prime ministerial decree. And it gave the details on how the devolvement was going to be. And it stated that the state was devolving the management of its wells and boreholes to the Council. That decree used the phrase wells and bore-holes nineteen times. In law, we say that it is for emphasis. This "our water" is not a well, is not a bore-hole, because those who have traveled up North most of the water there is from bore-holes, some as deep as four hundred meters. That is what the law was devolving to the Council and it even warned that even though we are devolving these wells and bore-holes, they remain the inalienable property of the state. You are only there for supervision. Then the question arises; is Kumbo Water Authority a well or bore-hole? (P 21).

The NSODA also argued that the assignment of the KWA to the Kumbo council was not the hand-over of control to the Council because only the NSODA had the jurisdiction to transfer control of the Kumbo water project to another management entity, and according to the NSODA, this never happened. Moreover, the NSODA complained that the stringent measures put in place to curb corruption in KWA,

were unexpectedly not respected because the Kumbo Urban Council had conceived the water scheme as a public service and not a community property. According to the NSODA, the absence of control over the KWA paved the way for scandalous embezzlement and mismanagement criticised by the population.

The legal adviser, conversant with the 2004 law of decentralisation, explained that the MOU was conceived with stakeholders not conversant with the law as the text of application was yet to be public. It also included the conviction that the new Cameroon government policy required that all water development schemes in rural areas are placed under the supervision of the local council. The elite noted that "these laws stated in the text of implementation stipulates 19 times that only boreholes and wells dug by the government are concerned by these laws" (P 21).

On the other hand, the Kumbo council official asserted that the 2004 laws covered the entire water scheme and that "the MOU which was aimed at giving KWA legality is binding and will not be reversed despite calls from major quarters that the terms of the MOU be revisited" (P 14). The same Kumbo council official argued that "the 2004 decentralization laws give the council the supervisory power over water schemes" (P 14). The management of the NSODA and the Paramount Chief, however, have dissociated themselves from the MOU. The elite conversant with the 2004 laws challenged the Council, stating that the 2004 laws of decentralisation applied only to public water schemes like boreholes and wells.

According to the majority of interview participants, the laws on decentralisation were misinterpreted and implemented before the parliament made the text of the application public. The misinterpretation of the laws on decentralisation caused animosity between the Paramount Chief and the Kumbo council officials. A community leader narrated that:

> but the 2004 law had not been put into practice because it had not been elaborated upon. Councils are supervisory authorities over water since the Parliament passed a text of the application. If they had, therefore they were supposed to have said it over the news. There is a problem in Kumbo because of the water. The council has overstepped her boundaries as supervisory authorities in the Kumbo Water Authority that is what is bringing the conflicts. In fact, if you are asked to supervise something do you own it? (P 12).

Issues related to the MOU centered in part on the definition of the term "supervision". The Kumbo community questioned whether assigning supervision to someone meant ascribing ownership to that

person and conceding all assets and finances to the supervisor with no influence in decision-making. The Kumbo community also questioned whether going into this agreement rules out the participation of the community in decision-making pertaining to the water scheme. However, the NSODA claimed that the MOU was not recognised by the community, and so considered it null and void. One entrepreneur voiced the community's suspicion of the government: "now when we look into the argument we see that the Mayor is claiming ownership of that water, not the aim to supply clean water to the population. That is where it is provocative. The main problem is that we feel that the Government which is now the Mayor is intruding into the water project" (P 17). A construction work questioned the inconsistent position of the Mayor with respect to the supervision and ownership of the water scheme over time:

> from the little history I had, the Mayor was the person saying that the water belongs to a Banso man to the Minister of Mines, Water, and Energy. If power and control remain with the SNEC, that will be the last thing a Banso man will do. He said this when he was not in power. Later on, when we came to power he did the opposite of what he said. From there we are very angry with him and can cause a problem in this land (P 7).

From the above, it is clear how the issue of rightful managers, owners, and supervisors of the Kumbo water project has been a source of great conflict over time. The community claimed ownership stemming from the fact that the need for clean water originally came from the community members: first identified as an issue by the women, the Kumbo water project was initiated by a Nso elite (Fonlon at the time), and later facilitated, partially funded, and maintained by the Nso people, as described in earlier sections of this chapter. The community is very protective of the water project, which they perceived as "a gift", and will go to great lengths to protect it. A report from the Kumbo Water Authority to the Kumbo Urban Council of September 11, 2016, noted that "the Fon (Paramount Chief) of Nso remains the legitimate owner of the Kumbo Water Authority and remains to be the patron of the body. Any attempt at ignoring this position, according to them is a complete violation of the status of the KWA". The report also claimed that "the status does not in any of its articles present the Kumbo Urban Council as the legitimate or any legal owner of the KWA but simply as a supervisory authority, who in the deal (MOU) was called upon to maintain the autonomy of KWA". The supporters of the Paramount Chief maintained that it would be dishonest for anyone to assert ownership of the KWA in the presence of these stakeholders

in the MOU.

There is a noted disconnect between top-down management of the water scheme and the Kumbo people, their community priorities, and their relationship with the higher level's organisation of bodies and figures. These are the sources of the crisis: the management of the project and the power relationship among stakeholders that have triggered negative reactions in the local population. These reactions reflect the negative influence of the water scheme originating from stakeholders.

### 4.1.5. Management crisis

The most recent crisis was resulted from an accumulation of community grievances and dissatisfaction with the power struggle over management and control over the Kumbo water scheme. This sub-theme emerged as a result of the transfer of the supervisory role to the Kumbo council.

The report of the Kumbo Water Authority crisis of September 11, 2015, revealed that, in 2010, the Paramount Chief and 14 of his supports were sued by the people of Jeng-Kitiwurn at the Kumbo High Court. Under the instruction of the Paramount Chief, the Nwerong (a sacred society under the patronage of the Paramount Chief) carried out an attack on the Jeng people in which houses were burnt and many people sustained injuries. A court decision indicted and asked the Nwerong to pay a fine of 80 million CFA francs (about $65,754,328 CAD). Unable to pay the fine, the Paramount Chief approached the KWA manager and requested funds from the KWA coffers. When the KWA manager refused the request and referred him to the Kumbo Urban Council for permission to disburse such an amount, he was infuriated. The question of ownership was set rolling. The report of the Kumbo Water Authority crisis of September 25, 2015 further noted that the Paramount Chief proclaimed: "the Kumbo Water Authority was the property of the Nso people and if Nso is in difficulty it is but normal to use funds from KWA to solve such problems". Endorsing the Paramount Chief, the interview participants representing the Kumbo community also believed that the water was their property and was placed under the guidance of the Paramount Chief, who is their father. One retired government official explained that: "the last crisis is a management crisis because the population represented by the Paramount Chief thinks the council or the Mayor wants to take the water from them. So these are the crises that have been in Kumbo" (P 5). The

management crisis was an indication of the impact of the undefined task of the stakeholders that affected the livelihood of the Kumbo population.

In 2015, a fourth crisis emerged as the KWA office was moved from the palace to the former Kumbo council office. A piece of land for the construction of the new KWA office was purchased and this raised concerns. According to the minutes from a Nso water supply meeting of July 2015, the actions of the council "infuriated the Fon who felt that the construction of the siege of the KWA means that he will lose rents that he is enjoying from the occupation of the palace premises by KWA". Although the decision to construct a permanent office for the KWA had been deliberated upon four years ago, the Kumbo community claimed this decision was a plan to further embezzle project funds.

In the same year, the Paramount Chief responded by mobilising the community to inform them of the recent development. According to the report on the Kumbo Water Authority crisis of September 11, 2016: "the Fon summoned the population to the esplanade of the palace and informed them that someone wants to seize his water given to him by his son". Because the issue of ownership was never really settled and has been a repeated debate over time, each time there was a crisis, the ownership question was always rekindled. As such, the purchase of the piece of land by the Kumbo Urban Council prompted the Kumbo community to raise questions about the financial management of the scheme and the need for replacing the water system. They raised the question of whether the money had been well-spent on buying the plot of land and whether that money would have been better spent replacing pipes.

The Paramount Chief escalated the conflict by sealing the doors of the KWA, located at his palace at that time. The Kumbo water crisis report of September 11, 2015 detailed: "it should be noted that on July 10th, 2015 Sehm Mbinglo 1 sealed the doors of KWA faulting it for gross mismanagement". All these actions were in defiance of the Senior Divisional Officer's orders banning any public gathering. The Senior Divisional Officer responded by sending a heavy military presence to the city. The Paramount Chief argued that he was taken unaware when the office used by the KWA was transferred from the palace to the Council. One council official reported that "we equally transferred the KWA offices to the old council buildings, from where they have been operating successfully. So far the workers of KWA are

going on smoothly with their routine activities" (P 14).

In 2016, the Paramount Chief created another office for the water project in his palace and named it Nso Community Water. This decision was based on taking over control and management of the Kumbo water scheme. A staff member from Nso Community Water noted that the Paramount Chief created a temporal committee to take care and ensure that the people of Kumbo were supplied with clean water. A report on the Kumbo Water Authority crisis of September 11, 2016, observed that "he started printing his own bills under the banner of Nso Community Water". It became clear that the Kumbo water scheme had two operational structures, namely: the Kumbo Water Authority and Nso Community Water. Unable to resolve the problem, the two key stakeholders continued to operate a separate management structure. The *World Echoes* newspaper of April 16, 2016, noted that "one operated by the Mayor and the other by the Fon and NSODA with the office in the Palace supported by over 95% of the population". The separation of the management structure exposed the mix-up of the stakeholders of their role in the water scheme and its impact on the livelihood of the community.

The Kumbo community blamed the Kumbo Urban Council for not taking responsibility, as the supervisory authority, to ensure that the water scheme remained free of conflicts, and instead caused conflicts. One Kumbo community leader stated that: "and the reason for a third party like the council was to get a structure that can lobby for help. Till today the council has never lobbied for any help for these asbestos pipes to be replaced" (P 12). The Kumbo community would have preferred the Kumbo Urban Council to focus on changing the asbestos pipes and working to maintain a clean water supply, rather than getting involved in the crisis.

The participants from Kumbo community were suspicious that the persistence of this crisis might prompt the government transfer of management to the state. The council official also remarked that: "now, Camwater will come in. So it means that if the problem does not end at the level of the council it will go to the State" (P 14). Camwater is the state-owned water company managing water supply in Cameroon. These fears were also reported by *Barata News* of August 18, 2016, (a local news outlet) noting that the crisis between the Kumbo community represented by the Paramount Chief and the Kumbo council urged

the transfer of the scheme to the state:

> for months now, there has been a standoff between the Fon of Nso (Paramount Chief) and authorities over the Kumbo Water Crisis. A truck of military men is moving heavily into Kumbo as Camwater plans to take over the management of the Kumbo Water Scheme from the hands of the Kumbo Local authorities.

In a public declaration in 2016, the Paramount Chief held that the Kumbo community had decided to control its own water. This declaration followed an allegation by the Kumbo community that the Kumbo Urban Council mismanaged the project's funds, amounting to FCFA 98 million francs CFA that was donated by the Canadian government for the replacement of expired pipes. Instead, the money was being used to construct an ostentatious building as a permanent office for the KWA. The Paramount Chief urged the population to stop going to the Kumbo Urban Council to pay their bills but rather come to the palace. These allegations were confirmed by one legal adviser, the Mayor, from a speech he made that:

> SATOM (road construction company) gave money in bits and pieces. Canada gave 98 million and I used some of the money to train the manager, to sponsor the manager and a technician for a crash course, and I used the balance to grate the road from Kikaikilaki to the water catchment at Yeh, that is two kilometers. According to him (the Mayor) the 98 million francs CFA is gone. But the money wasn't 98 million. So you see there is a lot of money in the scheme. So that is when the people opened their eyes and said is this what this gentleman (the Mayor) has been doing? And we could not be indifferent. (P 21).

The water crisis took another turn when the newly created Nso Community Water (located at the palace) dispatched its employees to disconnect water from the homes of the KWA employees as a penalty for not paying their water bills. A report on the Kumbo water crisis of September 11, 2016, suggested that "it is worth noting that these people (KWA staff) did not pay bills as a favour and preferential treatment offered them for their services as workers. This was done with an immediate effect and as if that was not enough, the KWA workers reacted by reconnecting the tap water". Nso Community Water responded by removing the water pipes, which prompted the KWA employees to request the involvement of the Senior Divisional Officer. The disconnection of water increased the polarisation of the Kumbo community. This was confirmed by the Kumbo Urban Council official who stated that "the issue of the crises came and poisoned the minds of people. Threats against the administration of the council became worse" (P 14). One woman narrated that women have expressed their exasperation and stated that "we are tired of this

issue because the water is abandoned and it is not treated, the pipes are not changed, the tanks are not cleaned, water is not controlled where there are leakages, all these can cause the outbreak of waterborne diseases" (P 2). The overriding fear of women to return to the unprotected water sources.

The power struggle between the Paramount Chief and the Kumbo Urban Council over who is the legitimate manager and owner of the project means the actual maintenance of the water project was being neglected. The actions of these stakeholders pave the way for corrupt practices and alienation of the Kumbo community, which has impeded the benefits of the water scheme. Also, the call for an audit is an indication of the mistrust of the KWA by the Kumbo community.

**4.2. Stakeholders' involvement**

Stakeholders played a huge role in facilitating or hindering community access to water, effective management of the water scheme and created a situation of persistent water crisis for over four decades. An analysis of the stakeholders was necessary in this study in order to identify the key parties involved over time in the water scheme and to provide a clear understanding of how they influenced the management of the scheme. This section describes each stakeholder and their involvement in the Kumbo water project. Two main stakeholders played key roles: the Kumbo Urban Council versus the Kumbo community.

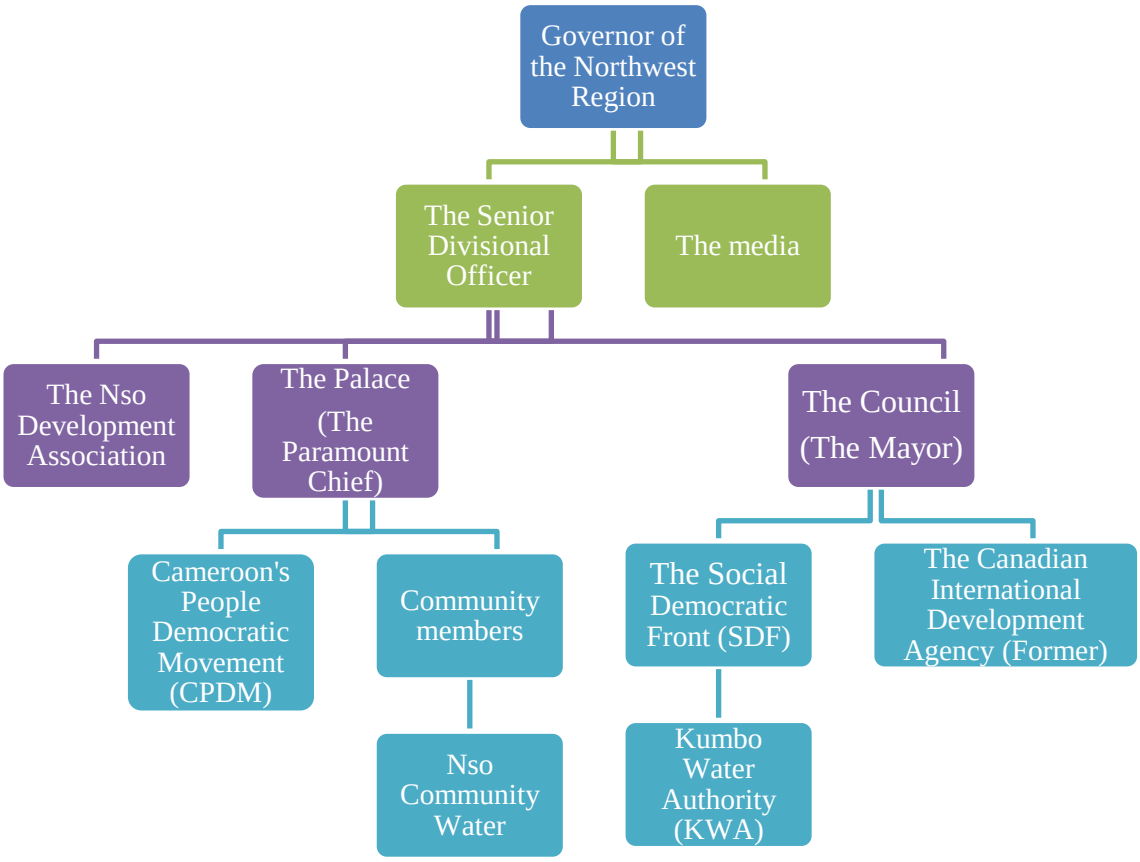


Figure 5: Stakeholders involved in the Kumbo water project

The stakeholder diagram is necessary to demonstrate the links between various interest groups or individuals and their influences in the Kumbo water scheme. The diagram is arranged according to the power they exert in implementing the Cameroon government's water policies on one hand and the Kumbo water project's policies on the other. The stakeholders are categorised into primary and secondary stakeholders. While the primary stakeholders have a direct influence on the project, the secondary stakeholders have indirect influence. In the Kumbo water project, the primary stakeholders include the Paramount Chief, the Mayor, the community members, Nso Community Water, and the KWA. The secondary stakeholders include Cameroon and Canadian governments, the NSODA, CPDM, SDF, the media, the Senior Divisional Officer, and the Governor of the North West Province of Cameroon.

### 4.2.1. The role of the Cameroon government

Interview participants offered diverse opinions describing the role of the Cameroon government in the Kumbo water scheme and its influence on the social and economic benefits. Whereas some

participants perceived the government's role as important in supporting the success of the water scheme, it was quite obvious that most participants perceived the role of the government was hindering the progress of the project. The first part of this section discusses the positive role of the government, and the second part is what the participants perceived as unfavourable for the water scheme.

**a. The relationship between the Cameroon government and the Kumbo community**

The Cameroon government acted in several ways to implement the water system. Professor Fonlon and the Cameroon government's contribution in fostering and strengthening relationships with the Canadian government was critical to the successful initiation of the water scheme.

The participants from the Kumbo community perceived the role of the government as crucial in authorising the project, facilitating the importation of material provided by the Canadian government, its transportation to Kumbo, and in supervising the overall functioning of the water project. One water technician, a staff of the Nso Community Water noted that the Cameroon government "did not levy high taxes, and Fonlon was the Minister of Equipment and a personal friend to President Ahidjo by then. Fonlon took advantage of his position and the government only cooperated, so it was not difficult" (P 11). One assistant delegated noted that "if the government could permit the Kumbo water authority to exist for these many years, therefore the government validated the project and liked the way the organization was functioning" (P 1).

Interview participants' responses described how the Ministry of Mines, Water, and Energy in Kumbo monitored the scheme and provided technical advice to the KWA staff and other staff from neighbouring water schemes in weekly meetings. One assistant delegate in the aforementioned ministry noted that "since this is a government service our job is to follow up and send to the regional governor the minutes of the meeting and the proposals that we give to the community" (P 1). The technical advice provided by the Ministry of Mines, Water and Energy was significant as it was a government strategy to ensure quality water to the Kumbo population and prevent water-borne diseases.

However, one Kumbo farmer interviewed accused the government of sabotaging the water project in order to take control of the project away from the community. The participants in the study also

indicated that cohesion has been lost due to the government's tepid attitude towards the management crisis that has polarised the Kumbo community. out of dissatisfaction, a school teacher suggested that government should resolve the crisis by taking over the project.

**b. The Cameroon government's initiatives to support community participation**

According to the majority of the participants, the government involved the Kumbo Community in the activities of supplying water, thereby, empowering community members to build their capabilities, manage their resources, take decisions, and generally control the water scheme. One delegate in the Ministry of Water and Energy explained that:

> we act as a supervisory authority, a technical service of the ministry to KWA. Actually, we carry out inspection. We are involved in the water analysis. When KWA is carrying out water analysis, it is imperative for them to involve the technical service of the ministry to be sure that what they are doing is right. And we have a weekly follow up meeting. Every Monday we meet to see, to take stock of the past week, to hear the problems faced by KWA and propose solutions. That is how we work with them. We are also like the mouthpiece of the civil society. When most of the problems arise in the population, most of them report to us, then we take measures with the administration, head of the division and we bring them to task (P 3).

One assistant delegate indicated that:

> since the scheme has been very autonomous financially it is only some few years ago that KWA started writing projects to send to the Ministry of Water and Energy in Yaounde for a sponsor. We do not resist or hesitate to sign most of the documents, they come asking for aid and we validate after educating them on what to do. We also visit the catchments and treatment area once in a while and we carry out a residual test to make sure chlorine is always available, and to see that there is sustainability (P 1).

Providing access to potable water to the Kumbo community was of paramount importance to the government because of the risk of the outbreaks of water-borne and communicable diseases. Thus, the government's interest and motivation in preventing further water management crisis in the water scheme led to the investigations of the issues that disrupted the effective functioning of the water project. A participant explained that a ministerial committee was set up to investigate issues affecting the water scheme and the population. The committee proposed solutions to the project's management, audited project finances, and gathered reports from the Kumbo Urban Council and the palace on the issues faced by the project, and recommended solutions to perceived problems. These efforts employed by

Cameroon's government were to ensure the smooth functioning of the water scheme and enable the Kumbo community to benefit from the social and economic outcomes of the water scheme.

**c. Cameroon's role in the water crisis**

Interview participants' opinions about the role of the government in the water crisis are varied. Few participants approved of the government's role in the project, while others blamed the government for its problems. Those in support of the government attested that the government played a key role in promoting teamwork between the KWA and the Technical Department of the Ministry of Mines, Water and Energy, and preventing management crisis of the water scheme and access to water. For example, one assistant delegate noted that: "the authorities here are working as hand in glove with the water authority and the technical service acting as the eye of the state to write and tell them what is going on in this town" (P 1). The same government official reported that the government intervened each time there was a crisis related to the water scheme to find effective solutions.

The government's role was perceived by the local media as fruitless, poorly timed, inconsistent, nonchalant, and ineffective in resolving the water crisis. For example, *Barata News* of August 2016 blamed the government for a poorly timed intervention, which they say created an atmosphere of uncertainty in the Kumbo community when it stated. The *Cameroon Tribune* of July 22, 2015, reported an attempt by the government to resolve the water crisis in a stakeholder meeting that created more problems among stakeholders than expected. The Senior Divisional Officer requested the Paramount Chief and the Mayor to sit together and negotiate, which never happened. The *Cameroon Tribune* observed that this meeting would have been more effective if it took place earlier: "the prolonged water crisis in Kumbo, headquarters of Bui Division in the North West Region, which has since generated many disagreements, disinformation, and rumours, was at the centre of a meeting of stakeholders on July 20, 2015, in Kumbo". The *Focus Online* of August 21, 2016, recounted the futile attempts by the government to resolve the crisis:

> worthy of note is the fact that various efforts have been made to resolve the Kumbo crisis but all have ended in a fiasco. Late last year the Governor of the NW region, Adolf Lele L'Afrique

> installed a regional management committee to manage the water and various meetings have been held thereafter but none has yielded any fruits.

Many local newspapers perceived the government's actions with respect to the water project as inconsistent. One example of which was its authorisation for the creation of private radio stations. The creation of these radio stations was an immediate consequence of the most recent Kumbo water crisis. The radio stations were used by individuals to inform the population of the history of the water project, the alleged mismanagement, and corrupt practices, and created the impression that the Mayor was planning to own the water scheme (to be elaborated upon in the role of the media below). This situation escalated the conflict and disrupted the management of the scheme resulting in the operation of two management structures for a single water scheme.

The majority of the participants perceived the government's interference as detached from the issues affecting the water project. This was apparent when the government created an inactive commission to resolve the most recent crisis plaguing the functioning of the water scheme. The slow collaboration of the government with the Kumbo community to solve the water crisis compelled the community to take decisions to influence their development. One community leader narrated that:

> out of curiosity, the Kumbo community headed by the Fon (the Paramount Chief) went to the water tank to take total control of the water tank. Since the onset of the conflict, the palace took control of the former office of the KWA and the water tank was still under the control of the other KWA. The Fon decided yesterday that since the water is mine, the water of the community, it is very pertinent that we take everything. The traditional authority of Kumbo went to the water tank to take authority of the tank (P 12).

This action escalated the conflict, resulting in the militarisation of the treatment area. The government's strategy to militarise the water treatment plant was viewed by many participants as an attempt to deprive them of managing the water scheme and consequently its development.

The frustration participants expressed indicated that the Kumbo community was not empowered to participate in the development of the water project. One construction worker asked: "is the army going to treat the water? If there is any leakage in the tanks, are they technicians to do the work? They know nothing about the water. If the governments persist this way, I will say the government wants to spoil this

project" (7, p. 6). Many of the participants felt that the government's management was perpetuating the crisis.

The majority of the participants also perceived the government as not promoting the people's well-being, encouraging personal endeavours, or fulfilling campaign promises. The Paramount Chief expressed discontent at the failure of the Cameroon government to honour its promises to compensate and resettle the displaced people of Yeh, the same way it had failed to fulfill promises to promote local development in Bui Division. But, the provision of water to the population was perceived as the responsibility of the local and national government. The Kumbo Water Authority crisis of September 11, 2016, insinuated that the government had shifted these responsibilities to the local council to the detriment of the community: "the Bui administration termed the water crisis a private matter. They failed to acknowledge the fact that the provision of drinking water was a state responsibility that has been devolved to councils". The reason why a few government authorities recognised the water crisis as challenging.

Even though the Kumbo community largely criticised the government for employing unhelpful strategies for urgent problems, few participants retained their criticism. One teacher suggested that the government's hesitance in ending the crisis was an attempt to carefully examine the facts; she stated: "the government cannot come immediately and take a decision without doing some findings. In my own opinion, government mechanism is slow but sure" (P 4). One government delegate supported the government's prolonged intervention efforts but called on the government to act fast and appoint a manager.

The Cameroon government's intervention in the realisation of the Kumbo water project and its policies put in place in 2004 was an attempt to incorporate the participation of the Kumbo community in the water supply. With the absence of the text application in that year, it became difficult for the Kumbo community to interpret the law and it triggered a prolonged water crisis. The result of this case study indicates that, if the government policies are well envisioned, the government's efforts in providing water to the population can reduce household water scarcity and consequently improve socio-economic growth of the poor population in a sustainable way.

### d. The Cameroon government's water law

In participant interviews, the legal ownership of water and the legal responsibility for managing the supply and delivery of water to Cameroonian citizens were prominent themes frequently associated with the existing water crisis in Kumbo. One interviewed retired government official confirmed that it is the legal responsibility of the government to ensure potable water in sufficient quantity and quality to communities and to provide regulations preventing conflicts over water. The government employed a multi-sectoral and multidisciplinary approach to supplying and ensuring access to potable water by enacting the decentralisation law in 2004. This decentralisation law offered guidelines on the supply of water. The most relevant of these guidelines was to devolve the responsibilities of managing boreholes and wells to the local councils. However, the 2004 law was very controversial in the Kumbo community and perceived as ill adapted to local realities. A community leader perceived the law as such:

> when you look into the clause of decentralization, you will see that the water issues that the government passed over to the Mayors, are the waters that were created by the government, like wells, boreholes, and others. These types of water supply are now supposed to be controlled by Mayors in their municipalities. In municipalities where there is no water existing like the water scheme we have here, the Mayor is responsible to create water schemes for the people (P 12).

The report on the Kumbo water management crisis of September 11, 2015, also revealed that the law had nothing to do with Kumbo community water because that water source is a stream. The legal adviser corroborated that: "it is not a well. It is not a bore-hole. It is not only peculiar for Nso. So the legislator forgot that we had community water schemes in town" (P 21). According to interview participants, Kumbo community water was not provided by the government and so should not be managed by the government.

However, the majority of the interview participants felt that the 2004 law enacted by the government was responsible for the water problems currently related to the Kumbo water project. Noting the top-down policy model in Cameroon, participants were of the opinion that the law did not take into consideration their specific situations. What the law missed specifically was the fact that the Kumbo community has a stream as a source of potable water and not boreholes or wells as the 2004 law stipulates. In this way, the law is perceived as creating conflicts among stakeholders in the Kumbo water scheme.

Furthermore, the method used by the government authorities, directing the military to suppress the Kumbo community from managing the water scheme, was perceived by participants as an attempt to surreptitiously remove control over the local water project from the Kumbo people. One teacher asserted that "we are not ready to leave an inch of the water to the government. We have written to the government. We have harnessed our water" (P 8). The community is resolute to improve their development.

The determination of the Kumbo community that the 2004 law did not apply to the Kumbo water scheme indicates the value the Kumbo community attaches to the water project. It is also an indication that the water project has a social and economic influence on the Kumbo community, and, therefore, a good indicator of the sustainability of the water project.

**e. The government's role in the sustainability of the water scheme**

The sustainability of the Kumbo water project was another important sub-theme that emerged in participants' interviews, in large part because the long-term endurance of the water scheme was a priority of the Kumbo community. The government assisted the community financially in the initial stages of the project and later funded the extension of the water supply to other parts of Kumbo. These funds were also used for agroforestry training and planting of water-friendly trees at the catchment area. The training was meant to educate the population on the need to protect the water source and foster a long-term sustainability of the water supply. The government also provided technical expertise on sustainability such as water treatment through the Ministry of Mines, Water, and Energy to assist the KWA technicians. As one teacher observed: "the government always insists that this water must be treated; that is a way of sustaining water" (P 15). The government's role was significant as sustaining the water will enhance the livelihood of the community.

However, many participants believed that the government's slow response to the water crisis showed that it was not meeting its responsibility to ensure the sustainability of the project. The same participant declared that "we are very disappointed with the government because this problem has taken a very long time, a year. In a community like this where the lives of the people are based on this water"

(P 15). The annual management report of the Kumbo water scheme of 2015 revealed the government's inability to pay water bills is a concern and threatens the sustainability of the water scheme:

> management already established and channeled the situation of unpaid bills by government institutions from 1991 to 2013 as requested by the Cameroon Minister of Finance through the Governor of the North West Region to the Senior Divisional Officer for Bui for eventual payment. Follow-up is being done by our consultant of Tax Management Consultancy in Bamenda for payment to be realized. Note should be taken that this exercise has not been all that easy for management and the consultant to have this realized. We have continued to issue and serve these institutions for endorsements of water bills from January to date for eventual payment. We hope this dream will come true one day to cement the sustainability of our water scheme.

The majority of the participants blamed the government for not consulting with or involving the communities before putting state operations of all urban water supply schemes under the control of the SNEC in 1984. Under the SNEC-controlled Kumbo water project, the users were charged high rates for water usage which resulted in protests by the community and eventual expulsion of the SNEC. The legal adviser of the community indicated that:

> SNEC surreptitiously took over control and management of the water in 1984. And until today, it is not known how they came to manage the water. They came and met the installations in place and all they did was to install more meters and collect money from us. The intention of Fonlon was not for this water to be sold (P 21).

The exclusion of the community in the decision to entrust the management of the water scheme to the SNEC by the government, and the subsequent water rate escalation resulted in protests, destabilisation of the management of the scheme and threatened its sustainability.

### 4.2.2. The role of the former Canadian International Development Agency (CIDA)

The role of the former Canadian International Development Agency was another prominent sub-theme in participants' interviews. Canada was the main donor to the Kumbo water scheme and remains an important stakeholder in the water project, understanding CIDA's involvement contributes to the broader picture of conflicting ownership claims surrounding the project. In this section, the CIDA's involvement in the Kumbo water scheme and its influence on the livelihood of the Kumbo population will be discussed.

#### a. CIDA's assistance

Participants from the community recognised the role Canada played in the early days of the

Kumbo water project, which was conceived in the 1960s and completed in 1972. In their interviews, community members discussed tremendous technical and financial aid from the Canadian government. The first phase of the water project was realised with the material support of the Canadian government. The table below gives a breakdown of the contribution of each stakeholder.

Table 2: Main stakeholders and contributions in the first phase of the Kumbo Project

| Stakeholder | Material contribution | Financial contribution in francs CFA |
|---|---|---|
| Canadian Government | Plumbing materials, piping, and fittings; salaries of supervising engineers | 420,000,000 |
| The Federal Republic of Cameroon | Customs duty-free materials from Canada, transportation of pipes and other materials | 60,000,000 |
| State of West Cameroon Government | | 12,000,000 |
| The Kumbo Community | Manual labour supply for trench digging, transportation of potable construction equipment and materials | 80,000,000 |

One member of the KWA staff recounted that the "Kumbo water authority is born out of the generosity of the Canadians" (P 20). A report on the Kumbo Water Authority crisis of September 2016 notes that the first stage of the project was funded with 420 million francs CFA (Financial Cooperation in Central Africa or Cooperation Financière en Afrique Centrale). One community leader also recalled that:

> from the beginning—in 1974, Canadians provided pipes, which came with other accessories, but the labour was done by the people of Nso. No financial aid came at that time. Labour was actually provided by the Nso people and you know that we can talk about the financial aspect when we were building the catchment and the storage tanks.

In the second phase of the project, the Canadian Society for Civil Engineering (CSCE) contributed technical services, the protection of the water catchment area with fencing, and training of local engineers as part of the CIDA-funded project. As one participant noted: "the Canadians sent their own engineers, and we had good engineers like Mr. Lucas and two others who came and started the work" (P 11). According to the CIDA website, the second phase was funded with 350,000 Canadian dollars (Approximately 151,773.97 francs CFA). However, there have been conflicting accounts on this money. The community's legal adviser recounted that "the Kumbo Urban Council declared that the money was 98 million francs CFA. No! It was three hundred and fifty thousand Canadian dollars practically about

180 million francs" (P 21). The conflicting accounts raised a lot of suspicion in the Kumbo community, and few interviewed participants felt that the Kumbo Urban Council has to be honest with their donor.

The efforts of the Canadian government through CIDA influenced the lives of the Kumbo community. The Kumbo people recognised this and referred to the water scheme as a gift from the Canadian government. However, the community's perception of the water scheme as a gift has played a major role in the complex ownership problem, the water crises, and thus the sustainability of the water scheme.

**b. Training**

In participants' interviews, it was widely held that training was an important part of the CIDA's involvement in the project. Most women's groups were trained on farming techniques to improve water supply. In their interviews, community members observed that training the KWA technical staff in Canada was important to support the long-term sustainability of the project. An official from the Kumbo Urban Council explained that "when the Canadian agency came here we ensured that the manager of KWA and the two technicians moved to Ottawa for training and we equally had some courses with the workers of Kumbo Water Authority to educate them" (P 14). Overall, participants indicated that they felt they gained new knowledge about water systems through the training and the knowledge-sharing conducted by the CIDA and the CSCE. However, few participants alleged that training was a tactic devised by the Kumbo Urban Council to further embezzle project funds. This fear could be the product of some people's lack of awareness on how the project funds were spent, which evoked suspicion in the community and contributed in part to the crisis among stakeholders.

### 4.2.3. Role of the Kumbo Urban Council

A sustainable water project requires collaboration among all stakeholders. The Kumbo Urban Council constitutes one group of stakeholders responsible for supervising and preserving the water scheme. The pursuit of potable water for the Kumbo community by all stakeholders has been accompanied by many crisis situations over time. The Kumbo Urban Council's influence on the outcome of the Kumbo water project has been questionable. This section discusses five sub-themes, including the Kumbo Urban

Council's participation, management, and control of the Kumbo water project, its influence on the availability and affordability of potable water, its role in funding the project and in the water crisis that developed after the Memorandum of Understanding in 2008.

**a. Kumbo Urban Council's participation, management, and control**

As the closest level of government to the local community, there were high expectations locally that the Kumbo Urban Council ensured good water governance and supported sustainable development. The report on the KWA crisis of September 2016 originated from a twice-annual forum initiated by the Kumbo Urban Council to exchange ideas and integrate best practices about good water governance:

> the forum where the Chairman, Caretaker, and the Manager of the village water schemes and the KWA respectively, come together twice a year to deliberate together. During these meetings conflicts existing between the water schemes especially crisscrossing is resolved. Good practices are exchanged, and the various schemes are sensitized on ways of water treatment, water hygiene and sanitation such as manual chlorination technics.

In addition, the Kumbo Urban Council acts as an advisory body to the water scheme, organises elections to the board, and defines policy resolutions. The council delegate, the chairman, and vice chairman act for both the Advisory Board of the KWA and the General Assembly. According to the guidelines and principles of the project written in the report on the KWA crisis, the Kumbo Urban Council was established for the smooth operation of the Kumbo water project. The report on the KWA crisis also indicates that the Kumbo Urban Council intended to act as the "watchdog that guarantees the respect of norms, the rule of law, and respect of the rules and regulations of KWA". The Kumbo Urban Council safeguards the health of the population by providing quality water, ensuring the rights of the water consumers, and promoting community participation in the water project.

Although there were positive accounts of community participation in the participants' interviews, contentious debates surrounded the issue of the Kumbo Urban Council's control of the water scheme. Whereas participants from the community criticised the Kumbo Urban Council for overstepping its role to manage the day-to-day running of the KWA, one official from the Kumbo Urban Council maintained that the KWA is self-governing but falls under the guidance of the Kumbo Urban Council. Because the

KWA is under the supervision of the Council, it took actions to move the KWA office from the palace to the Kumbo Urban Council premises without the prior approval of the Paramount Chief.

The Kumbo Urban Council official argued that the Council's actions were guided by government policies: "we follow the 2004 law, especially Article 16 which gives right to the various councils in the Republic of Cameroon to control and manage water in their municipalities and we are doing just what the law states" (P 14). The council authorities also contended that the KWA was self-governing. But, this argument was contradictory because it had been revealed by other interview participants that the Kumbo Urban Council had been controlling the KWA because it was under the supervision of the Council. The Kumbo Urban Council official contended that the KWA is "autonomous; we are an authority and we act like supervisors to ensure that things move well and they are going well. That is the reason we have the office of Kumbo Water Authority now at the level of the Kumbo Council" (P 14). The question is that if the KWA was autonomous, why was the Kumbo Urban Council controlling the water project? One participant asked councils in neighbouring cities that were not claiming a supervisory role to water projects in their communities if the Kumbo Urban Council was simply implementing the 2004 laws? As another interview participant phrased it: "what about Nkwen in Bamenda mile four that has a community water and there is a council. Has the council gone to get the water and creating conflicts with the people?" (P 7).

Disagreements over the use of funds allocated to the Kumbo water project was a recurrent theme in the majority of participants' interviews. Allegations that the council was mismanaging or siphoning off project funds to corrupt government officials was a prominent concern for the Kumbo community members. The community's legal adviser observed that "the love of our money by the mayor has generated this crisis, and they have used the money to bribe the administration. Corruption is not something you see. You feel it" (P 21). The call for an audit was instigated because of the community's suspicions of corruption. The same legal adviser complained that because the government officials had been corrupted, impossible preconditions for an external audit to take place were given to the disputing parties: "why would the Governor insist that an audit will be paid for by Kumbo Urban Council, the Fon

of Nso and NSODA? Because he knows that when they will get an audit firm that will ask a lot of money the parties will not afford" (P 21). The Governor was aware that the fees for an audit firm he chose exceeded what the disputing parties (the Paramount Chief, the NSODA, and the Kumbo Urban Council) could afford. The elite had the same complaint that: "and they are going to an audit firm that asked for 32 million. Divided by three is 10.6 million. Where will the Fon get the money from? Where will NSODA get that money from? The council itself does not have it" (P 21). When asked how the previous audits had been funded, the legal adviser explained that the KWA had been funding all previous audits and could not understand why the KWA could not fund the 2015 audit: "so what is wrong with KWA paying. After all, they were supposed to carry out an audit in 2015. So they are the ones who pay. The governor said no! That is when I understood that he had been corrupted" (P 7). In the opinion of the elite, all complications arose from the fact that the Mayor was attempting to conceal his corruption, which would have been revealed through a legitimate audit.

According to a 2003 financial report of the NSODA, there was a reserve fund of 36 million francs CFA in the KWA account. By the end of 2008, the document revealed that the fund had been reduced to 28 million francs CFA. It also reported that for two years nothing was added to the reserve fund, a situation the Kumbo community found undesirable. Replacing the expired asbestos pipes of the scheme had been reviewed, with the CIDA requesting that local contributions be made from the reserve fund, but there was not enough money remaining for such contributions. Consequently, the KWA solicited contributions in cash from the Kumbo elites, creating a situation where the KWA will always depend on external funding. According to the notification of the royal proclamation of 2007, the Kumbo community concluded that the supposed 28 million francs FCFA reserve in the account existed only on paper.

The community's legal adviser also reproached the Council for using project funds to purchase a piece of land for 10 million francs FCFA without the knowledge of Paramount Chief, who was considered a significant stakeholder in the water project: "that plot is not worth ten million" (P 21). This purchase resulted in a dispute between the Paramount Chief and the Kumbo Urban Council and further accusations of corruption among Kumbo Urban Council officials. The Council was thus accused of using project

funds to bribe the government administration and block actions, such as the audit request that would have exposed the Kumbo Urban Council's endemic corruption. Despite all these allegations, the Kumbo Urban Council maintained that it was not responsible for KWA finances and had no signing authority on KWA accounts. A report of the KWA project crisis also corroborated that "the Kumbo Urban Council is not a signatory to the financial accounts of KWA. Secondly, council guarantees the participation of all stakeholders as enshrined in the KWA statues" (P 21).

The Kumbo Urban Council has some positive influence on the project and the Kumbo community, especially, as it organised the forum for the exchange of information and acted like an advisory body to the KWA to ensure smooth operation. But, the Kumbo Urban Council was criticised for overstepping its role and taking over control of the KWA, whereas, its role was to guide operations. There were also allegations of endemic corruption perpetrated by the Kumbo Urban Council authorities. Consequently, a call for an external audit by the Kumbo community, which never happened, only created further suspicions.

**b. Available and affordable potable water**

Although there were many criticisms of corruption against the Kumbo Urban Council, many participants in the interview agreed that the Kumbo water project has benefited the Kumbo community in delivering clean, accessible, reliable, and affordable water; sustained economic growth; encouraged stronger, more integrated communities; and created more jobs. Table 3 below indicates the quantity of water supplied in $m^3$ in 2013 and 2014, the equivalent monetary value in FCFA (Franc Communauté Financière Africaine), and maintenance fee.

Table 3 : Quantity and cost of water generated and sold by KWA project in 2013 & 2014

| Description | Quantity ($M^3$) | | Value (FCFA) | | Maintenance fee (FCFA) | | Total (FCFA) | |
|---|---|---|---|---|---|---|---|---|
| Month/Year | 2013 | 2014 | 2013 | 2014 | 2013 | 2014 | 2013 | 2014 |
| January | 36078 | 38851 | 9082935 | 9840470 | 1658400 | 1721600 | 10741335 | 11562070 |
| February | 40185 | 41440 | 10123620 | 10476665 | 1645200 | 1726800 | 11768820 | 12203465 |
| March | 31628 | 33004 | 8019000 | 8341110 | 1645200 | 1739600 | 9664200 | 10080710 |
| April | 32979 | 33287 | 8345635 | 8453915 | 1654800 | 1752400 | 10000435 | 10206315 |
| May | 29734 | 30805 | 7503930 | 7787203 | 1670400 | 1759200 | 9201330 | 9546430 |
| June | 30806 | 30744 | 7767900 | 7825655 | 1681600 | 1765200 | 9449500 | 9590855 |
| July | 27242 | 30971 | 6893825 | 7877045 | 1691600 | 1777200 | 8585425 | 9654245 |
| August | 29897 | 29787 | 7619435 | 7567025 | 1702000 | 1786400 | 9321435 | 9353425 |
| September | 31865 | 31238 | 8117730 | 7902230 | 1714000 | 1804400 | 9831730 | 9706630 |
| October | 27838 | 27868 | 7080685 | 7063715 | 1726000 | 1810800 | 8806685 | 8874515 |
| November | 29131 | 33640 | 9146445 | 8512705 | 1737600 | 1825200 | 10884045 | 10337905 |
| Total | 347383 | 361635 | 89728140 | 91647765 | 18526800 | 19468800 | 108254940 | 111116565 |

Overall, from 2013 to 2014 there was an increase in the quantity of water supplied by the Kumbo water project to the community (figure 8). This was also accompanied by an increase in the amount of revenue generated by the project (figure 9)

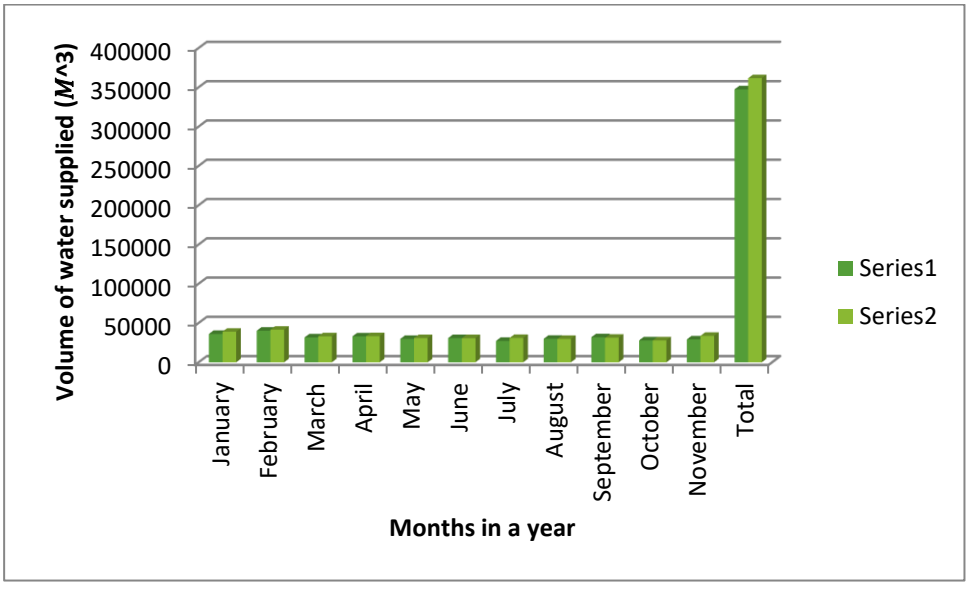


Figure 8: Cost value of water realized by the KWA in 2013 (series1) and 2014 (series2)

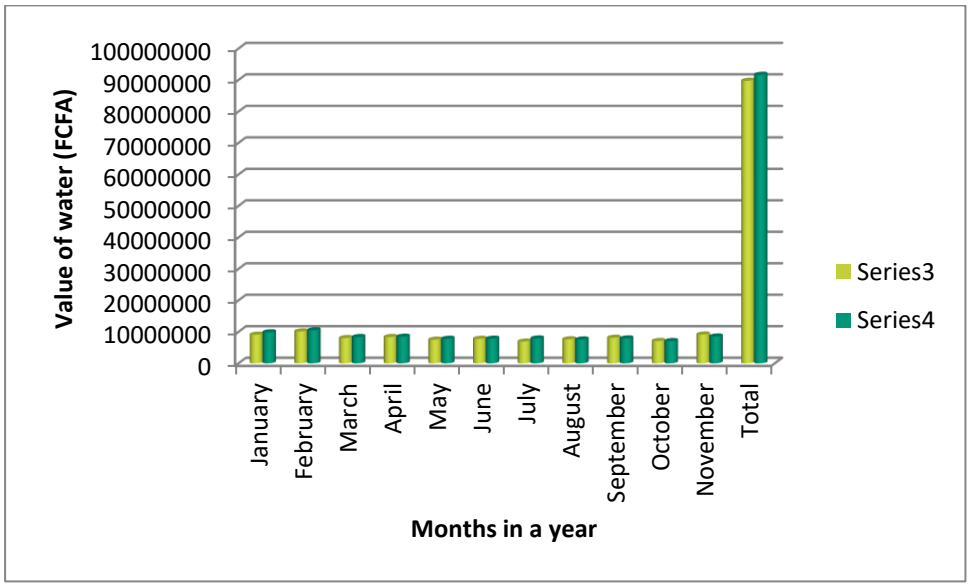


Figure 9: Volume of water supplied by the KWA project in 2013(series1) and 3014 (series 2)

The Kumbo Urban Council authority explained that the Council further extended water coverage and created new water sources as reserves to be used when the water table drops: “the KWA came out with another new project and sent water over eight kilometers to the South to join the system so that it can act as backup to the normal water during the dry season” (P 14). The booster lines were constructed in collaboration with the Canadians to pump water from Kinsa streams to the training center to distribute water and reduce the water shortages crisis.

Evidence of the Kumbo Urban Council’s positive role was corroborated by a businesswoman’s comments in Kumbo that “the council ensures that KWA treats water and makes sure it is potable. The council also protects the rights of the consumers and the population at large” (P 17). The council official perceived the role of the Council as a strategy to the law: “so we took our destiny into our hands and ensure that we keep KWA in the council to operate there temporarily and ensure that people actually get potable water” (P 14).

The Kumbo Urban Council’s efforts to provide affordable water to the community were challenged by the topography of the area, as water could not be supplied to certain areas by gravity alone. One Kumbo Urban Council official explained: “so we acquired a generator to pump water to those people and because the electricity system is poor indeed, we had to put in place a manual system so that in the

case of failure in light we can use to pump water to the affected areas" (P 14). The majority of the interview participants agreed that the Kumbo Urban Council's role in devising alternative methods to ensure potable water reached the isolated areas was acclaimed positively by the community.

Perceptions diverged, however, on the increased water charges imposed by the Kumbo Urban Council in 2015. This divergence of local opinions was a consequence of the two opposing water structures (the KWA and Nso Community Water) created by the Paramount Chief and Kumbo council-controlled KWA. The Kumbo community with the support of the Paramount Chief asserted that the Kumbo Urban Council's water bills were expensive compared to the water bills from Nso Community Water under the authority of the Paramount Chief. People were being charged twice for the same water project. Some people paid to the Kumbo Urban Council, some paid to Nso Community Water, and others stopped paying water bills. The Kumbo Urban Council, on the other hand, argued that the charges had been reduced to enable low-income families to have water in their homes. The cost for water supplied at public taps was significantly reduced per cubic meter. For instance, one Kumbo Urban Council official noted that "the water supply was given at 100 francs FCFA per cubic meter which is equivalent to two gallons" (P 14). The Council official also claimed that after this reduction in fees charged for water, the community enjoyed the water without any water shortage for eight years and everyone was happy.

The majority of the Kumbo community members, however, disagreed with the Kumbo Urban Council and argued that the water bills from the Council were unaffordable and made access to potable water difficult for the poor. One delegate noted, "that is what has been causing this crisis because, even before the Mayor and the Fon went into crises, the community was complaining of the water rate that people pay which people thought that was too much" (P 3).

A few participants expressed satisfaction with the rate and questioned why some people demanded that water is supplied free notwithstanding the need to financially sustain the water project. One interview participant stated that "the challenge that has led to the crises here presently is that the population thinks that they should be drinking water free of charge. That is how it started. Later on, they said no, let the rates be reduced. I don't know their ways of comparison, or else I think our rates are ok and with these

rates, the scheme will be sustained" (P 4). Differences of local opinion such as these are indications of how divisive the issue of water management is in Kumbo, and consequently, indicative of the causes of the crisis.

While the Kumbo water project needs to be financially sustainable, the increase in water rates only deprived the poor, especially women and children, from access to potable water. Recall that the Kumbo women expressed the need for potable water to alleviate their burden.

**c. Funding**

This issue of funding was a recurrent theme in the participants' discussions, which focused on its relevance to the role of the Kumbo Urban Council as a major stakeholder in the water project. The Kumbo Urban Council was critical in securing funding from the Canadian government for the expansion of the water project. As stated by one Kumbo Urban Council official: "we engaged a process with the Canadian government to be able to lobby for resources from there in order to service the water scheme" (P 14). Although its role in accessing funding was essential, the Kumbo Urban Council was accused by some interview participants of acting without the involvement of the Kumbo community by misallocating scarce resources and managing the water project as a personal rather than public property. One participant from the community alleged that "the Mayor took upon himself without the consent of the Nso people and sent people to go and study in Canada" (P 7). The interview participant could not understand why limited resources were used to sponsor KWA staff to study in Canada, when there were local resources that could offer training, and direct those funds toward the cost to replace the expired asbestos pipes.

**d. Kumbo Urban Council's role in the water crisis**

The water crisis is briefly explained in this section to underscore the involvement of the Kumbo Urban Council in the water crisis. Though members of the Kumbo community blame the Kumbo Urban Council for its role in the conflict over the control of the Kumbo water project, one Council official recounted in an interview that the Council had played a significant role in mitigating the conflict between the Yeh people and Kumbo community over the catchment area: "we were brought on board by the people of the Yeh area. We sat together, dialogue and we solved the problem so that the Yeh people should be

friendly to the water and embrace the water system" (P 14). During this process, the Kumbo Urban Council realised the Yeh community had no access to clean water. Consequently, the Kumbo council and the Paramount Chief established a water scheme for the community. To further please the Yeh villagers, the road to the Yeh area was rehabilitated. The appeasement of the Yeh villages permitted the demarcation of areas for agricultural purposes in the catchment areas, planting of water-friendly trees, and building fences around the catchment areas.

As in one participant's opinion, the community perceived the Council as responsible for the controversies plaguing the water crisis. The Mayor was blamed for the uncompromising position in relation to dialoguing with the Paramount Chief in the most recent water management crisis. A community leader stated that: "I particularly blame the Mayor for this crisis. He is the supervisory body who is supposed to solve problems but, in this case, he is the one making things difficult for the community by not negotiating with the Paramount Chief" (P 12). A majority of the interview participants detailed how the Kumbo Urban Council was assigned a supervisory role within the Kumbo water project following the 2004 law on decentralisation. A MOU was signed between the local leader and the Mayor pending the text of the application. One water technician of the Nso Community Water recalled that: "if you look at the terms of the memorandum of understanding, it was clearly stated, 'the Kumbo council shall be in charge of supervision and not own the project'" (P 10). According to the study participants, the terms of the MOU were not respected, which triggered a major water crisis.

The Kumbo Urban Council was accused by the Kumbo community of sabotaging the Kumbo water project and alienating the community from participating in the management of the water project. According to the accusations, this led to the failure to chlorinate, filter, and directly supply the water to its intended users. One legal adviser noted in the interview that the Kumbo Urban Council officials are not reliant on Kumbo water and so do not understand or respect the need for those who do: "the Mayor does not drink the Kumbo water. He drinks Tangui (bottled water). Those people use Kumbo water to flush their toilets but we drink it" (P 21). The community elite feared a typhoid outbreak as a consequence of such mismanagement: "I hear that there is an upsurge in the number of people who go to consult in the

hospital who have been diagnosed of typhoid. I say this is a sabotage. It is a sabotage" (P 21). The legal adviser believed that the government is using the Kumbo Urban Council to sabotage the Kumbo water, then own it: "the government is preparing our minds so that they can have something to hang on to take over the water. We went to see the Prime Minister and that is what he has been hammering on. About the health of the people. No! It is sabotage" (P 21). According to the 2004 law of decentralisation, the government was not supposed to be involved in the Kumbo water project. But, because of the income generated by the Kumbo water project, and the corrupt practices of its managers, there is constant interference by the government administrators in the management of the project. Thus, the Kumbo community is suspicious of government administrators using the Kumbo Urban Council to own the community water project.

The Council was also accused by many in the Kumbo community of willfully destroying water pipes and disconnecting water from small businesses as punishment to those who fail to pay bills to the Kumbo Urban Council. One interview participant believed that these actions added to the suffering of the population. In this case, the value of water was understood to be attributed mainly to sanctions instead of encouraging water preservation for ecological reasons. This lack of concern among Kumbo Urban Council officials of possible water scarcity and its effects on small business entrepreneurs and the poor was unacceptable to the majority of the participants.

It is clear that there are divergent views in the Kumbo community of the role of the Kumbo Urban Council. While few community members believe that the Kumbo Urban Council's involvement in the Kumbo water project contributed to the livelihood of the Kumbo community, the majority of the interview participants felt that the actions of the Council played a huge role in obstructing the population from enjoying the full benefit of the Kumbo water project. The various actions brought about many conflicts among stakeholders and deprived the population of its basic right of access to clean water. The Kumbo Urban Council promoted participation by creating a platform for the exchange of information and acted as an advisory body. The Kumbo Urban Council also attempted mitigating the Yeh crisis and improving access to water. However, the negative influence seems to outweigh the positive impact, as the Kumbo

Urban Council is accused of mismanaging project funds and claiming ownership of the water project to the detriment of the poor who have no option but to return to the valleys for water. Furthermore, participants alleged that there is a problem of accountability in the management of the water project. All calls for an external audit failed as the Kumbo community accused the Mayor of bribing the government administration to conceal the corrupt practices of the Kumbo Urban Council and KWA staff.

Although the Kumbo Urban Council tried to improve access to potable water, affordability was problematic as the Kumbo community complained of high water rates, making it difficult for equitable distribution of potable water. This, partly, was the immediate cause of the most recent crisis. Despite all these accusations, the Kumbo Urban Council maintained that they are guided by the government's policies.

**4.2.4. The role of the media**

At the height of the controversies surrounding the Kumbo water project, the Kumbo community expressed different views on the effects of the media in the water crisis. The role of the media emerged as an important theme in participants' accounts, in terms of how the media raised awareness on the water issues and contributed to influence the recent crisis that affected the Kumbo community.

In their responses, interview participants from the Kumbo community revealed that huge gains were made with the government authorisation of private radio stations (owned by individuals) to operate in Bui Division. By mobilising, disseminating information about the issues affecting the Kumbo water project, the radio stations helped to educate the community and improved their understanding of the situation. As one young participant revealed: "the role of the media is very important. I know that we have four media here and they are very instrumental in informing, sensitising, and educating the people because there are so many people who do not know the history of the water" (P 13). This same youth criticised the Kumbo Urban Council for taking advantage of the Paramount Chief because of his inadequate education level: "the Fon is not as educated as the Mayor. So, the Mayor has been working on the Fon's intelligence until this era. Thanks to our radio as we tend to realise what is taking place in the water project" (P 13). Furthermore, the media's influence was helpful in creating awareness about law-

related issues: “the radio is doing a perfect job to inform and educate people on legal issues on the water project because they were ignorant” (P 13).

The radio stations created awareness of the 2004 law of decentralisation and the ways the law was being used by the Kumbo Urban Council for the benefit of the Council’s officials. The same youth believed that the radio stations were uncovering the secrets of those in authority: “when the radio exposed the people who were working with the water project, who do not want to explain to the public what is going on, they (those in authority) asked the radio to be closed for exposing them” (P 13). But water does not have an alternative product. It is a resource which yields community benefits, and it is a point of sensitivity to the Kumbo community. The radio stations provoked the call from the authorities for all private stations to be shut down because the government wanted information on the Kumbo water project to be censored before publication.

However, to the majority of the participants, the radio stations did not provide any solution to the ongoing water crisis in Kumbo. Threatened by the information on the corruption and manipulation revealed by the radio stations, one Kumbo Urban Council official noted that “a certain radio station in town came out with some sort of antagonism where they spoke about issues to poison the minds of the people. They were talking of mismanagement and all the like” (P 14). The owners of the various radio stations were in opposing political parties, they politicised the water crisis, and used the media to polarise the community. The same Kumbo Urban Council official revealed that “people go on the air castigating the Mayor, castigating the council, castigating individuals and politics came in since the Council is run by an opposing party, the people use it against us” (P 14). A community leader explained that “we know actually that the party in place here is the Social Democratic Front (SDF), the opposition party which to me they are using one of the radio stations, the PFI community radio to give out their own information” (P 12). The radio stations further polarised the community.

As many participants reported, the information provided by each radio station depended on who owned the radio station and their political affiliations, so the community received conflicting information from the various stations. Furthermore, the majority of the uneducated population were easily

manipulated. One farmer observed that "the council is using one medium, the community radio to give some funny information about the Nso water but the other media that are commonly used for other forums like manual newsgroups are used by the Fon to disseminate information" (P 6). Thus, the radio stations and those who controlled them polarised the Kumbo population and politicised the water issue. In the opinion of the farmer: "there are media that are owned by the council and media that are owned by the Fon? Some of the media give clear information from the Fon and his people. One medium was instigating people to come out on the road and protest" (P 6). The diverse explanations provided by the interview participants on the ways the radio stations were implicated in the power struggle surrounding the water project highlighted the division and social tension prevailing in the Kumbo community.

The conflicting information disseminated by the radio stations influenced a social media exchange between the local elites, and elites in the Diaspora and created a conflict-ridden Nso community. According to the *Cameroon Postline* of August 22, 2016, "the Kumbo water crisis has ignited a social media war among Nso indigenes in the diaspora. While some are supporting the Mayor's camp, others have backed the Paramount Chief, arguing that the already impoverished masses should not be coerced into buying a free gift of nature like water".

The Council and Palace are the two main stakeholders influencing the crisis that has rocked the Kumbo water project for years. The ownership of radio stations by these stakeholders was not only looked upon by the government administration as a threat to the existence of the water project but a medium where political opponents exercise power and influence, and thus, the government ordered for all radio stations to be shut down.

A staff member of Nso Community Water blamed the government for authorising the functioning of private radio stations: "it is thanks to the government that they allowed the media to exist" (P 20). Due to the discrepancy of information disseminated by the media, tensions mounted between the opposing camps. *Cameroon Tribune* of August 11, 2015, revealed that some people lodged a complaint at the State Counsel's Chambers against an influential elite and owner of a radio station:

> allegedly making contemptuous and disparaging allegations against their persons on the radio. He said the complainants are highly aggrieved that they have been slandered and their reputations tarnished by someone who has taken upon himself on a daily basis to make disparaging remarks against their persons, alleging for instance that they have embezzled huge sums of money from the Kumbo Water Authority.

Consequently, the government official in charge of Communication intervened to ease the tension and arrived at the decision that any information provided to the media has to be censored for accuracy: "the Senior Divisional Officer said local radio stations concerning the water crisis must be censored by the Divisional Delegate of Communication to avoid further controversy and conflicts between the two parties". Even though the media was in some ways useful in mobilising the community for meetings concerning water issues, it helped to create and sustain divisions within the community because it was used by opposing political camps to rally people to their respective causes.

**4.2.5. The power of the Paramount Chief**

The power of the Paramount Chief with respect to the water project was a prominent theme in participants' interview responses. This section will explain the power wielded by the Paramount Chief and justify why he became a main stakeholder in the Kumbo water project.

The community is split in their perception of the Paramount Chief's role in the water scheme. While part of the participants from the community held that the Paramount Chief's role in the initiation and management of the project helped, others perceived that his influence and actions contributed more to the long-standing problems surrounding the water scheme.

At the initial stage, the Paramount Chief was engaged in mitigating conflict with the Yeh community to facilitate the fulfillment of the requirement put forward by the engineers for the supply of water to the Kumbo community. This conflict resolution process resulted in the resettlement of the Yeh people and compensation thereafter. A council official revealed:

> first and foremost was the catchment area whereby we had to go in for what we called conflict mitigation where we brought on board the people of this area. The Fon came out with something good to ensure that at least we give potable water to the people of Yeh and a water scheme was established there (P 14).

A KWA staff member further substantiated that the Paramount Chief used his powers and influence in mobilising and engaging the population for community work: "when it comes to rallying people to do community work for the water scheme, the Fon is the person who will use his traditional institutions like the 'Ngumba', the 'Nfou', the warrior society and the warrior groups, and they will rally people to carry out the job" (P 19). The powers of the Paramount Chief in controlling the population come from the various traditional institutions playing a vital role in the sustainability of this scheme. Given that the Paramount Chief had the social capital, he used his influence to enforce order and ensured access to water in the community. Through his influence, many organisations such as the NSODA and the KWA were created to ensure effective management of the water scheme.

Before employing ways to appease the Yeh people, interview participants criticised the Paramount Chief for the forceful evacuation of the Yeh people: "before the people of Yeh could leave the place for this water catchment to be maintained was the initiative of the Fon of Nso (Paramount Chief) who had to evacuate people from that area and settle them in the other villages before the place was suitable for this water intake" (P 12). This action brought discontent to the Yeh people and contributed to the first water crisis.

The polarisation of the Kumbo water scheme resulted in a long-standing water dispute among the Council, with the KWA under its jurisdiction; and the Paramount Chief, with the NSODA under his authority. The *Cameroon Tribune* of November 10, 2015, reported that "the long-running controversy over who between the Paramount Ruler of Nso and the Mayor of Kumbo should manage the Kumbo Water Authority, KWA, appears to know no end in sight". The *Focus Online* of August 21, 2016, also reported that:

> efforts to resolve the Kumbo water crisis which has for over one year now seen Kumbo Council and KWA on one hand and NSODA and the Fon of Nso on the other, disembowel themselves in a glory public spectacle over who should manage, appear to be far from over as the Fon of Nso HRH Sehm Mbinglo has declared that the water should be consumed free of charge.

Challenged with this stalemate, the Paramount Chief requested the Senior Divisional Officer to remove all military forces stationed at all water outlets as reported by the *Cameroon Postline* of August 27, 2016:

> the Fon also gave the SDO an ultimatum to demilitarise the Kumbo water installation. In his communiqué, the Governor said he was writing in reaction to the Fon's letter and the ultimatum given to the SDO of Bui, demanding the demilitarisation of the Kumbo water installations and the immediate removal of CAMWATER and CDE Engineers from Kumbo water installations

The Paramount Chief defied the orders of the Senior Divisional Officer and declared that the water should be consumed free of charge. The *Focus Online* of August 21, 2016, also reported that these declarations were purportedly made to "curious subjects reportedly defying a prefectoral order signed on August 18, by the Senior Divisional Officer of Bui, banning any public gathering". The Paramount Chief's discontent was reflected in a statement reviewed in the *Cameroon Postline* of August 22, 2016: "I have done everything possible to find a peaceful solution to this water problem. Now that I have been described as stubborn, I won't step out of this Palace to Tobin or travel to Bamenda again for any discussion on the water crisis. I will die in this Palace".

The Paramount Chief's defiance triggered tension within the community as narrated in *The Focus Online of December 11, 2015*: "after the Fon of Nso's ultimatum to the Senior Divisional Officer for Bui division to demilitarise the Kumbo water installation, tempers flared over the weekend when the entire Bui Division was transformed into a military camp". This news outlet revealed that the government responded with a heavy military operation to prevent another incident similar to the 1991 mob action against the SNEC. The Governor also retorted by calling on the Paramount Chief to retreat from all water issues in Kumbo and give room for the government to handle the management of the Kumbo water scheme or face the consequences of the law. The *Cameroon Postline* of August 27, 2016, reported the Governor's frustration: "the management of potable water in urban and semi-urban milieu is the direct responsibility of the State". The Governor blamed the people of Kumbo for challenging the instructions of the Senior Divisional Officer for Bui, despite prefectoral orders prohibiting all public gatherings.

It is worth noting that the Paramount Chief enjoys the enormous support of the local population. Evidence of this is retrieved from the *Cameroon Postline* of August 27, 2016: "meanwhile, on the social media, the support of the Paramount Chief of Nso continues to grow, with many natives of Nso pledging to stand by their Fon and do whatever is deemed necessary for Nso people to manage their water as they

have done for the past 40 years". The Paramount Chief also commands a lot of power over his subjects and is not to be challenged by any government authority, as revealed in the *Cameroon Concord* of August 24, 2016: "any bonafide Nso man or woman sees the Fondom first as representing them before the Council or any Government organ". Against all odds, the Kumbo population heeded the call of the Paramount Chief who ordered the Kumbo people to enjoy the water free of charge as reported in the *Cameroon Postline* of August 27, 2016: "from this moment, all Nso people should buy pipes and install water in their houses, free of charge, and report to me accordingly". The Paramount Chief's declaration of free water and dependence on the elites to finance the water treatment was imminent; one starts questioning when this dependency will end.

The call for the population to remove their water meters and take to the Kumbo palace caused the Governor to withdraw responsibilities from the Paramount Chief. The power the Paramount Chief wields and social support from his subjects give him the motivation to influence decisions related to water to enable access to potable water for the poor. However, his declaration of free water to the Kumbo population was detrimental in sustaining finances for the treatment of water. It can be deduced from the above narrative that the Paramount Chief's role as a major stakeholder was palpable.

### 4.2.6. The role of the community

Participants of the study identified the Kumbo community as an important stakeholder in the water project, which was expressed through people's descriptions of community participation in the water project, the mobilisation of the community, and community monitoring of the water project. In Cameroon, within the framework of community development, communities are obliged to contribute financially or with physical labour to the capital expenditure of the scheme, to implement the water projects, and to take responsibility of the mobilisation of the community, organisation, and monitoring of their water projects. This section will demonstrate the role of the community in relation to these tasks.

#### a. Community participation

The participants of the study highlight the community's involvement and role in the initiation and management of the Kumbo water project. The participation of the Kumbo community in the realisation

of the Kumbo water scheme amounted to providing labour and financial resources. However, various experiences were narrated in the interviews for this study. The community assisted by supplying manual labour in digging trenches, as well as transportation of construction equipment and materials. One participant from the Yeh community stated that "some community members offered their land for the protection of the catchment area. This act means a lot to the Kumbo man" (P 9). The Yeh people were forcefully relocated by the Paramount Chief and the catchment area demarcated. Even though the relocation of the Yeh community was not voluntary, it was a sacrifice made by the community for the realisation of the water project.

Apart from these initial contributions, the community members monitored the catchment for debris and cleaned the catchment when necessary as reflected in one participant's description: "we went and cleaned it and ensured that the water is well chlorinated before we drink. So that we don't have typhoid" (P 21). A staff member of Nso Community Water explained that "when the Nso community went up to clean the catchment, after they took over from SNEC the whole community went there and they removed a lot of mud and dirt from the catchment" (P 10). A Muslim teacher confirmed that "if you go to the catchment area you will see it looking very clean and beautiful we went there recently at the middle of this crisis to tidy it" (P 9). The traditional division of the labour system was used during community labour activities. While the men were involved in labour-intensive activities, women supported the men with food and less intensive labour activities.

Planting water-friendly trees to ensure the supply of water in quantity and quality was evidence of the community's commitment to clean water. One community leader described how "trees were planted around the catchment area" (P 19). One government delegate also reported that "the community is ready to participate in any manual work that can help the project because the Kumbo man believes that the water project is their project. So they are able to come out and do manual work" (P 3). The manual labour contribution is the reason why the water project endures, despite repeated conflicts over management, in part because of the Kumbo community's commitment and dedication to maintaining the water supply.

The Kumbo community ensured the maintenance of the water system by contributing a symbolic amount for repairs and purchase of equipment. A staff member of Nso Community Water reported that: "for maintenance, the rates have been reduced given that it is a community project and not a profit-making institution. The few workers that are employed to take care of maintenance, and to repairs all public taps, the community pays a token which is used to provide workers remunerations and a few other things" (P 10). The community also participated in determining the rates for water consumed and for maintenance. Also, representatives from various quarters in the community often met to report and discuss issues about the project. One Kumbo Urban Council official stated that "at the level of representation, they come out en masse to represent different levels of the Kumbo Water Authority. As the people come to the Kumbo Water Authority they take information from there back to their community and take from the community to the Water Authority" (P 14).

The Kumbo community's role changed over time. Community participation shifted from consumers being passive service beneficiaries to become active leaders and owners. The community thought through water in every aspect of its useful life cycle. For instance, the protection of the source of the water, ensuring drinking water treatment to standard, water system quality maintenance, and testing water according to guidelines was a preoccupation of this community.

**b. Mobilisation**

The Kumbo community generally followed the routine procedures of community labour by respecting simple norms and non-tolerance to recalcitrant of community members. Mobilisation and organisation of the community were administered principally by the Paramount Chief, the custodian of the norms of the community. The Kumbo community respected the traditional laws of the land and heeded the call from the Paramount Chief, facilitating the quest for clean water to the population. One of the interview participants explained that: "if there is a community work called by the Fon, I am at his disposal to participate because it is my duty to make sure everybody is healthy and to sacrifice so that the catchment is clean" (P 7). A Council staff member substantiated that "we have always collaborated with the Nsoh community and whenever we needed cleaning around the various public taps, around the catchment areas,

we would call on the Fon to supply labour if the work was enormous" (P 14). Community mobilisation was important for the supply of labour and maintenance for the water project. In this way, the community demonstrated how invested they were in the continued operation of the project and thus constituted an important stakeholder.

**c. Monitoring**

The catchment area was vigorously monitored by community members to prevent human activities around the catchment from polluting the potable water supply to the community. One KWA water technician described community surveillance on inhabitants who attempted to resettle in the catchment area: "a few might be attempting to come back but I think when we finally understand their problem, we will take steps to carry out catchment protection" (P 10). The KWA staff do not only prevent human activities that contaminate water; they also take strategic measures to prevent sources of contamination as noted by another technician: "when there is rain we have to block the whole place because there is soil erosion from the farms to the water catchment" (P 11). The community was determined to sustain the water scheme, reported all issues related to the scheme to the management and technical teams. A community member reported that "when I went to the catchment, the area is clean and well secured, the farmers do not come near the catchment, water friendly trees have been planted to increase the water table" (P 7).

The community's efforts to ensure sufficient quality and quantity of water for the population was impeded by farmers carrying out farming activities in the catchment area. One interview participant reported that "now, the entire catchment area was protected but there are still farming activities going on there, and it is affecting the quality of water" (P 1). There was also the fear in the Kumbo community that the Yeh people who had been relocated were returning to encroach on the catchment area, which was reflected in one delegate's comment: "people are coming back forcefully and intruding into the catchment area. I think sooner or later, people may occupy the areas again. It is a serious problem" (3, p. 5). Apart from human activities around the catchment, natural factors also contaminate the water, and the community took necessary measures to avert water contamination: "when it rains the gravity of water

increases and carries silt into the water and the water becomes dirty" (P 1). This demonstrated how protectively the Kumbo community preserves their water project, which is relevant to the sustainability of the water project.

Although the Kumbo water project was sustained in part through the community's support, few participants perceived that community involvement contributed to the water crisis that has plagued the water project over the years. The Kumbo community's love for the water project and the ownership claim, perceived as the root cause of all the struggles, has resulted in a negative perception of the community's role in the water project. One retired government official reported that: "there are two camps fighting and as they are fighting nobody is taking care of the water" (P 5). Another participant suggested that if the crisis was not resolved, destructive activities around the catchment area will continue: "all those water friendly trees that were planted would be destroyed. As they are farming, the tendency is that they might plant eucalyptus. If all these things are not looked upon it will affect the scheme" (P 3). The above themes discussed in detail the various activities of the stakeholders, their relationship, and how they are interwoven.

**4.3. Summary**

Briefly, this chapter described how stakeholders' involvement guided the social and economic welfare of the people in the Kumbo community. It detailed the main patterns of distinctive and manifold issues that were revealed in the stories of the 21 participants interviewed. The data obtained illuminated the story of how stakeholders became involved in the project and a reflection of their role in the water scheme. Five major stakeholders were identified, and two of whom were discussed in-depth as they played a key role in the water conflicts. All stakeholders were described in detail as was their involvement in the management crisis, water crisis, and party politics.

Water is an intricate environmental issue, involving stakeholders at various levels—including the country's political establishment. Consequently, restructuring for efficient governance is hindered by vague roles and responsibilities. The case of the Kumbo water project has been plagued with conflicts between stakeholders for several decades.

The history of the Kumbo water scheme revealed that the project was initiated in the 1960s and completed in 1974. During this period the Kumbo community's involvement was impressively perceived as positive for the completion of the Kumbo water project. However, maintaining the water supply became challenging as the Yeh people had to be relocated in order to protect the catchment area and ensure clean water supply. This resulted in mistrust, grievances, and historical animosities expressed by the Yeh people. It can be deduced that the interaction of the stakeholders at the initial phase of the water project triggered water conflicts that have remained active in the project for decades. The attempt by the Yeh people to return to their birth land (which is where the catchment is located) despite the efforts of the Paramount Chief and the Kumbo Urban Council to appease them with potable water and an accessible road to Yeh, is an indication that the method of compromises cannot succeed without dealing with underlying beliefs, feelings, and relevant societal mindsets. Still, it was important that the water catchment was protected for the Kumbo population to enjoy the water, reduce women's burdens, improve sanitation, eliminate water-borne diseases, and increase employment through small business initiatives.

In addition to that, the Cameroon government, while very instrumental in the implementation of the Kumbo water project, often engaged in conflict situations with the Kumbo community, creating social tension and civil disobedience. The transfer of management for the Kumbo water project to the SNEC without consulting the population, the consequent price increase for water charges, and the closure of all public taps were direct causes for the burning of the SNEC's office and expulsion of the staff from Kumbo. Although government officials have a role to play as residents and public officials in promoting community participation in water projects, the exclusion of the Kumbo community from the decision on who should manage their project or suppression of community protest with military force did not provide the social environment that would promote peace. Therefore, limiting the Kumbo community members' pursuit of clean water to improve their livelihood. It can be interpreted that the Cameroon administration's method of suppressing protests made the Kumbo community more cohesive to an extent that shifted the loyalty of the members of the community to the Paramount Chief, who wields enormous power.

Furthermore, the involvement of the Paramount Chief, the Mayor, and the NSODA in signing the MOU to integrate the 2004 law of decentralisation and its ultimate failure brought about opposing accounts of ownership claims, rights to access to clean water, and the political undertone of service delivery. The direct and indirect role played by each stakeholder created a situation that challenges the basic principles of community management of potable water.

This case study has shown the complicated interpretation attributed to community water away from a clear understanding that it is a source of livelihood. The establishment of an efficient water supply system has been hijacked by local politicians who are strengthening their positions for political gains and has resulted in the complex relationship between stakeholders. This has opened the way to power and influence, and the corrupt practices that characterise the water project. Keeping politics away from water issues will go a long way to create systems of community management that reflect local realities and allow the Kumbo community to take advantage of the water project to improve their well-being.

The radio stations created by individuals in the Kumbo community changed the dynamics of the Kumbo water crisis. While the impact of local radio stations is debatable, they served as a means of education, self-expression, and communication, while also promoting the history of the water project and its traditions. Although it was an important tool to raise awareness of the water issues within the Kumbo community, it played a huge role in inciting the latest water crisis. The owners of the various radio stations used them to propagate their ideologies and further created social tension to the detriment of the poor people. In the next chapter, we are going to see how the actions of these stakeholders influenced the sustainability of the project.

# Chapter 5: Sustainability

This chapter discusses the sustainability of the Kumbo water project. In relation to this water project, sustainability means a water source is physically or biologically replaced and does not suffer depletion, operations and maintenance are performed in a way that ensures availability, accessibility, reliability, affordability, effective financial management, enough resources to support major rehabilitation expense, and the livelihood of all users is ensured over a prolonged period of time. This chapter describes eight main themes generated during the discussion, including ownership claims, management and control, water maintenance, climate change and environment, water availability, population expulsion, aid dependency syndrome, and water crisis. While Chapter Four explained the involvement of stakeholders in the water scheme, Chapter Five seeks to explain the sustainability of the water scheme and the interaction of the stakeholders in the process. The chapter will conclude with a summary of the main themes.

## 5.1. Ownership claims

Competing claims of ownership over the Kumbo water project was a recurrent theme in participants' interview responses and was perceived as a major challenge to the sustainability of the water project. Competing claims of ownership over the Kumbo water project emerged primarily as a result of rivalry between the Kumbo community and the Kumbo Urban Council to control the water project. The study reveals that power struggles over ownership and control of the water project were one of the main threats to its long-term sustainability. Nonetheless, both sides acknowledged the need for the sustainability of the water scheme. In the following points, the interaction of the main stakeholders and roles they played in promoting and/or obstructing the sustainability of the water scheme will be discussed.

One board member of the KWA indicated users' confidence and love of the water scheme: "They are overwhelmed with joy about the fact that this project is around them. That is why they guard it with a lot of jealousy" (P 4). The community spirit to sustain the water scheme was the driving force of the Kumbo community's ownership claim as expressed by a farmer:

> When you are in a community you must have community spirit in your mind. When your focus is to make money it becomes very difficult. So the fact is that people who do not have community spirit come in for ownership help the Mayor achieve a particular interest (P 6).

Even though the love for the project is important, this overwhelming attachment of the community to the scheme has led to the division of the water scheme with dissimilar management styles of the project that threaten its sustainability. It can be deduced from the participants' interview that the community's claim for ownership emanates from their constant allusion to the history of the water project because the need for water was identified by the women, initiated by a Kumbo elite, and labour was supplied by the Kumbo community. This created uncertainty regarding the role of each stakeholder in the community as expressed by one water technician:

> The Nso community since the early seventies has a total sense of ownership. If you look at the history of this project, in the early seventies, late Doctor Bernard Fonlon who brought this project to the community; they initiated it purely as a community project. The community took it like a community project by displacing over 600 inhabitants from the catchment area and did all the human labor. This is an indication that the project is purely a community project (P 10).

The zeal of the community to sustain the water scheme stems from their involvement during the initiation, implementation, and monitoring of the scheme. A government delegate argued that the fact that the community volunteered to work for the scheme to become functional was an indication that the water belonged to them: "They showed ownership of the project by working for the project without pay" (P 3). Therefore, labour invested by the community for the realisation of the project was a motivating factor of their ownership claim. However, the Council claimed the scheme as government property, and it is managed according to the 2004 laws. These misconceptions of who owns the project hampered interventions in maintenance when appropriate actions had to be taken, resulting in increased discontent on both sides. This further exposes the community to health hazards due to the use of contaminated water.

Furthermore, the actions of the Paramount Chief to relocate the Yeh community were perceived by the interview participants as efforts to ensure the sustainability of the scheme. A water technician was cognisant of the fact that: "The Fon personally sent the whole village out of the catchment area so that this water scheme should be sustainable" (P 11). A government delegate also insinuated that the displacement and sacrifices made by those who were settled around the catchment area were indicative

of the Kumbo community ownership and their desire to sustain it: “At the catchment area the Yeh people were displaced. They were even driven out of the catchment area and it was the traditional authority that drove them out because they were resisting that they should be compensated” (P 3). These sacrifices were indications that the ownership of the Kumbo water project was incontestable.

The majority of study participants attested to the strong influence of the Paramount Chief on the community and resented any outside influence that would jeopardise the existence of the scheme. As such, they claimed that since they were responsible for the management of the project without the interference of the government, the project was theirs and they have sustained its existence. One Nso Community Water staff member stated: “We recruit our workers, the general manager, the technicians and we decide on our levies to pay, we do everything without the aid of the government or other external services for anything. The General Assembly decides on what to do, who is to represent, where and how, they decide on their elections” (P 10). The new water structure created by the Paramount Chief was empowered and taking control of the water project to improve the lives of the poor.

The Kumbo community’s strong attitude towards the project was demonstrated by a student as he explained the allegiance of the community to the Paramount Chief: “before the coming of the white men, our authority was the Fon. It is rather unfortunate that the person heading the Kumbo Urban Council is a son of Kumbo and is owning the water scheme. We are behind the Fon” (P 13). One assistant delegate also substantiated that: “traditionally the Fon is ready to fight. When he speaks all the Nso people must respond knowing that it is their project they will never let go” (P 1). The availability of resources for water maintenance is an aspect of long-term water sustainability. The reverence for the Paramount Chief showed that the Kumbo community was ready to respond to the Paramount Chief’s order to provide labour for water maintenance. Even though the Paramount Chief’s influence on the community is important for long-term sustainability, the consequences of his authority are overreaching as the responsibilities created for the KWA to manage the project were undervalued by the Paramount Chief and his supporters, making it difficult for skilled project managers to accomplish their tasks.

Competing claims of ownership over the water project have been a controversial issue in Kumbo since the inception of the water project and has been the major contributing factor to the crises faced by the Kumbo scheme. This complexity threatens sustainability because of the numerous stakeholders claiming ownership. A wide variety of comments by study participants regarding the water ownership claims divulged conflicting perceptions among the participants. On the one hand, *The Focus Online* of August 21, 2016, reported that the water scheme is claimed to be a "Nso community water scheme realised with the financial support of the people of Canada through the efforts of an elite of Nso, Prof Fonlon". It further reported that the water scheme is considered as: "a government-owned scheme considering the provisions of the national legislation relating to water supply, and the technical and diplomatic role of the Government of Cameroon in the construction and mobilization of financial resources from the Canadian government". These misunderstandings are the result of self-interest and the conflicting roles of the major stakeholders. The majority of the interview participants perceived these contradictions as problematic to the sustainability of the water project.

First, the name of the water project became problematic. The new structure created by the Paramount Chief was named Nso Community Water, as declared by the legal adviser of the Kumbo community: "Nso Community Water. We do not want to hear anything about Kumbo Water Authority. We want to bury it. That's why we named it Nso Community Water" (P 21). Because of the two parallel structures for a single water supply project, the Kumbo community was divided on where to pay their water bills: while some people paid bills at the Kumbo palace, others paid at the KWA. The student who participated in the interview explained that:

> as we speak some people pay their bills to Nso Community Water located at the palace, while others pay bills to the KWA located at the Kumbo Urban council. Administratively, the government has not decided who will take charge of the water. They are just fighting. From what I see the community is trying to guard the water project because it rightfully belongs to the community. From all indications the community is united (P 13).

This disagreement between the Paramount Chief and the Mayor led to the worry of one Kumbo Urban Council official about the sustainability of the scheme: "concerning the sustainability of the project, I would like to say that the council is concerned about issues of the sustainability of the water project" (P

14). These controversies among stakeholders have endangered sustainability. As the stakeholders struggled, the management of the water project became fragile, corruption set in, and the result was a water crisis.

Renaming the scheme re-enforced the community ownership claim and triggered animosity among stakeholders that led to the water crises. One legal adviser from the community suggested that: "the name should remind whosoever that this water scheme belongs to Nso people and not the government. Kumbo council is synonymous with the state" (P 21). One farmer from the Kumbo community felt that the name conferred by the Canadians should be maintained: "we still want the original name (Nso Community Water) of the water project to be maintained. So we would not want anybody to destroy it" (P 6).

This section has provided explanations for the complex ownership claims within the Kumbo water project and the discord among stakeholders that resulted in the water crisis. The absence of peace in a giant water scheme such as the Kumbo water project hinders the sustainability of the water project.

**5.2. Climate change and environmental protection**

The ecological conditions of Kumbo allow for everyone to access water because the source is natural spring running from the mountains. Nonetheless, climate change and inadequate environmental protection were sub-themes frequently mentioned as a threat to sustainability and the community efforts to prevent the depletion of the water.

Although many participants identified climate change as a threat to the sustainability of the Kumbo water project, a few asserted that the malpractices of planting water-draining trees, such as eucalyptus trees, around the catchment area were even greater threats to the preservation of the water project. One teacher was concerned that climate change extended the dry season, which created water shortages and suffering among the population: "first of all, we have what is a global problem, called the climate change which is taking all of us by surprise. We have a prolonged dry season and that, of course, has affected us" (P 9). The prolonged dry season was blamed for the burning of the water-friendly trees planted in the catchment area. Another teacher further explained that: "during the last prolonged dry

season, our catchments were burnt even though some told us that they were burned intentionally by humans because of the crisis that is on-going" (P 8). It was the opinion of the majority of the participants that climate change had reduced the water level evidenced by the frequent water shortages, and something needed to be done to sustain it. They also recognised the danger and wanted to find lasting solutions to eliminate threats posed by climate change, as declared by one assistant delegate: "we are greatly involved to look for a permanent solution to the crisis" (P 1). The prolonged dry season, reduction of the volume of water caused partly by human activities around the catchment area were shredded evidence of climate change, which is a threat to sustainability. An unsustainable Kumbo water project will mean unreliable water supply services and an attempt by the poor people to return to the valleys to collect contaminated water. The Kumbo case study is complicated by the lack of coordination among the staff, the absence of staff in charge of ecological issues, and the undefined roles of stakeholders.

There was widespread recognition of the threats to the water project's sustainability by all interview participants representing the Kumbo community. However, the council and the KWA were using various approaches to combat the threats. One of the strategies used by the KWA to mitigate the effects of climate change was to eliminate eucalyptus trees around the catchment area and plant water-friendly trees. One Kumbo Urban Council official elaborated on these efforts: "when the Kumbo Urban Council came out with this strategy and conscious of the daunting effects of climate change and other environmental deficiencies, we encouraged the KWA to plant water friendly trees" (P 14). The KWA also involved organisations like the National Forestry Development Agency (ANAFOR) so water-friendly trees would be planted in the catchment area to help increase the volume of water in the catchment.

Open door water day campaigns were also organised at the Paramount Chief's palace to inform the population of an imminent water crisis. The *Cameroon Post*line of June 14, 2010, indicated that: "the open door water day came at the backdrop of persistent water shortages said to have been engendered by global warming, leading to low water tables in water catchments areas". Furthermore, one KWA board member explained that other water sources were earmarked to ensure consistent water supply to the population. The Ministry of Water and Energy also weighed in to discourage the Kumbo community from

the uncontrolled planting of eucalyptus trees for fuelwood in Bui Division. The same local newspaper reported that the Senior Divisional Officer warned: “the Kumbo population to desist from such practices as planting eucalyptus trees and farming around water catchments or face the law”. Stakeholders have played various roles in preventing the depletion of the Kumbo water scheme. While the community and their activities around the catchment posed a greater threat to the scheme, government authorities and the KWA staff were committed to bringing about lasting solutions and saving the scheme.

In this section, the effects of climate change on the sustainability of the Kumbo water project were discussed. Also, the roles the KWA, the Kumbo community, the Kumbo Urban Council, the Senior Divisional Officer of Bui, and the Ministry of Water and Energy played in mitigating the threat posed by climate change. Although efforts have been made to combat climate change, there are other man-made problems, such as the alleged mismanagement of project funds, power struggles between stakeholders, and the inability to raise funds for major rehabilitation of the project, that will disintegrate the Kumbo water project and render it unsustainable if not addressed.

**5.3. Management and control**

This sub-theme emerged as a result of the crises the Kumbo community had experienced over the years. This section will present conflicting accounts about the management of the Kumbo water scheme and how these management crises were perceived as an obstacle to the sustainability of the water project.

Several interview participants recounted a major sustainability challenge that threatened to undermine efforts to provide potable water to the Kumbo population. As pointed out in *The Focus Online* of July 24, 2016: “control and managerial crisis faced by the Kumbo Water authority makes its future uncertain and a serious cause for concern that calls immediate and drastic actions”. Opponents of the KWA criticised the management approach adopted by the KWA that left the community troubled about whether the Kumbo water project would be sustainable. A staff member of Nso Community Water explained his perception of KWA management:

> The sustainability is questionable because when you look at the crises left and right, and the unfaithful workers, the management is doing nothing to get good workers. They employ anybody

> to work in the office. Most of them are there to fill their pockets. That is causing a lot of problems for the sustainability of this water (P 11).

The recruitment of the KWA staff not being based on qualification and opportunities results in a weak staff capacity. This is manifested in ineffective management exacerbated by the lack of financial capacity to support the salaries of the staff. The weak management structure has translated into the alleged corrupt practices in the KWA that pose a major threat to sustaining the Kumbo water project and increasing water supply to the population.

The existence of two competing management structures (the KWA and Nso Community Water) for one water scheme raised further questions about whether they could provide effective services to the Kumbo community. As noted in a report on the KWA crisis of September 11, 2015: "as the confusion reigns, there are two functional structures. One at the Fon's Palace called Nso Community Water and another Kumbo Water Authority controlled by the Kumbo Urban Council and located at the Kumbo Urban Council premises". Every month, each structure produces water bills for Kumbo community members, which resulted in so much confusion the users were left to decide which bill to pay. The divided money collection points and the duplication of staff for a single water project only increased the scarcity of financial resources for major repairs and the replacement of the expired asbestos pipes.

The majority of participants recounted that the Kumbo community members considered themselves disenfranchised from the control and management of the Kumbo water project. One legal adviser from the community noted that: "we are now living in a stage where a few individuals took the project and managed it as if it was their personal business, a community property where everybody should participate in the management" (P 21). The exclusion of the Kumbo community is explained by their lack of knowledge on how the project was managed. One farmer explained that: "but when you are not so versed with the management of the project, and since we trusted our Mayor at that time, no one could be doubting until we found out that the replacement of the asbestos pipes that was supposed to be done was not actually done" (P 6). As such, interview participants perceived that the exclusion of the Kumbo community and the lack of information of how the Kumbo water project was managed undercut efforts

to sustain the water project. Despite the existence of the water committee, whose members are responsible for giving feedback to their respective communities, it still remains a huge challenge to involve the water users to effectively participate in the water project's financial management. Unless the KWA and the Kumbo Urban Council play their respective roles in providing information to the communities on the financial management of the water project, there will continue to be crises among the stakeholders, which is not favourable for a sustainable Kumbo water.

The study participants have introduced reasons why they think the management of the Kumbo water project is not sustainable. While the Kumbo community is distressed on these management issues, the question remains whether the powers-that-be is willing to heed to the demands of the population. The Kumbo community was conscious of the unsustainable nature of KWA management and raised their voices to the KWA for a change in management. As impressive as the demand for change may be, the answer lies in changing the attitudes of the staff. It is also doubtful whether a change in the KWA management will mean change in the corrupt organisational attitude.

The call for a change was the product of the fact that the key stakeholders for the water scheme, including the Kumbo community, were deeply involved in the conflict. One KWA staff explained that "at times there are leakages and when one party will go to solve the problem, the other party will come and there will be confusion. That is why we say the benefit of the water has been overshadowed by the problems" (P 20). The interview participants claimed they were confused about who was managing the project and they found themselves in a dilemma. In the middle of the rainy season, there were water shortages and no one was certain if the water had been treated between the ongoing conflicts. Some statements by the majority of the participants also suggested that the Kumbo community would have preferred the management of the Kumbo water project to be in the hands of the Paramount Chief as stated by one teacher: "the Fon who is representing the entire population, can mobilize the resources to get these pipes replaced" (P 9). When asked what can be done to resolve the conflict, the same teacher responded: "someone should intervene and bring this crisis quickly to an end because we are living in a situation where there is uncertainty" (P 9). One legal adviser among the interview participants called on the Kumbo

Urban Council to withdraw from the management of the water scheme to facilitate auditing of the KWA: In his opinion, these steps will enhance accountability and promote a sustainable Kumbo water project.

Women from the community turned to prayers for peace: “everything is prayers because when people resort to fighting, it can cause a problem that will destroy our water scheme and we will not have the water” (P 2). They prayed that the two parties would understand that they are all from the Kumbo community and that God should touch their hearts to reach a compromise. According to one leader of a women’s group, if this water supply project is not sustainable, people, especially the poor, will be adversely affected, and they will return to the days of the 1960s when water was collected from far-off streams. One woman from a women’s group remarked that: “The rich people can buy mineral water to drink. We cannot afford mineral water. So, we are putting all these in the hands of God. We must not lose the water because water is life” (P 2). These fears among the women were unintentional consequences because the water project was intended to relieve the women and children from the burden of fetching water from the valleys and enjoy the potable water.

This section discussed two parallel structures of the Kumbo water project that disintegrated the Kumbo community: incompetent staff, corrupt practices and a feeling of exclusion by the Kumbo community from the management of the water structure. In this case, the call for a change of management shows how disgruntled the community is about the management of their water project. Regardless of all these uncertainties, the Kumbo community can choose what organisations it will use to manage their water project.

**5.4. Lack of accountability**

This sub-theme emerged due to the allegations of misappropriating funds against the Kumbo Urban Council officials and the KWA staff. The display of wealth manifested by the staff of the KWA and the Kumbo Urban Council was troubling to many interview participants. The KWA staff and the Kumbo Urban Council officials were accused by one legal adviser (conversant with the management of the Kumbo water project) of stealing the Kumbo water project funds, faking repairs, inflating bills, and owning private meters not registered in the KWA computer system. Those who owned private meters

collected water charges from these meters for their personal use. The elite claimed that if these staff lived on their salaries alone, they would not acquire the wealth they displayed. Also, the funds allocated for the rehabilitation of the Kumbo water project, indicated one former CIDA website, were alleged to have been misappropriated by the Kumbo Urban Council officials. One community member stated that "the Canadian government funded the project. On the website, it shows that the funding was between 2009 to 2012 with 350,000 Canadian dollars paid to the Kumbo Urban Councils" (P 7). He continued that the "Mayor made a public declaration saying that it was 98 million francs CFA. I don't know the conversion. Nobody can actually situate where that money is" (P 7).

There were also contentions that money paid for the replacement of damaged pipes by a road construction company was siphoned by the Kumbo Urban Council officials and not accounted for. A teacher recounted that "a French company called SATOM (Société Anonyme de Travaux d'Outre Mer) was in charge of this project at that time, paid in some money of about two hundred million francs CFA, this was not made known to us" (P 9). Others asserted that financial aid from the Canadian government to replace the expired asbestos pipes for the water system was also not reported. As discussed earlier, the Kumbo population needed the KWA staff and the Kumbo Urban Council officials to be accountable and requested an external audit to be conducted. One water technician stated that "if the council does not produce their audits and leave as the population is demanding the problem will still continue" (P 11).

A few interview participants were suspicions and upset about the seeming self-importance of the KWA staff and the manner in which they flagrantly displayed their wealth (believed to be ill-gotten) from the poor. Also, they perceived that the reluctance of the Governor and the Senior Divisional Officer to order for the auditing of the KWA was an indication that these officials were complicit in the corruption of the KWA staff.

Many of the participants perceived the water crisis as a very controversial topic in Kumbo. They noted that while the majority of the community members were doing everything to prevent the government from interfering in the affairs of the water project, a few supported the government and its power to decide who should manage the water project as well as order the signatories of the MOU to

come together and revise the agreement. A government delegate felt that "the state should come in, draft a new document of management and put in a manager for the sake of the health of the population of Kumbo" (5, p. 10). Meanwhile, another government official reported that the Kumbo Urban Council represented by the Mayor and the Paramount Chief were not willing to negotiate: "we have tried to bring the Mayor and the Fon to sit together and discuss. It has been impossible" (3, p. 10). The prolonged nature of the conflict was a major concern to the community. One government delegate expressed concerned that:

> so if we allow these crises to go for long, the other people will come back to work their farm within the catchment area and nobody will stop them. And those water friendly trees that were planted will be destroyed. As they are farming, the tendency is that they will plant eucalyptus. If they don't check all these things it is going to affect the scheme very badly (3, p. 5).

Added to the aforementioned grievances, one Muslim representative observed that the question of ownership was preventing the audit and effective management of the scheme: "the KWA management know that the problem is the problem of ownership and conducting an external audit, but they do not want to be audited" (9, p. 12). The reason for avoiding auditing was caused by a huge sum of money ($350,000 CAN) granted by the Canadian government for the rehabilitation (change of the expired asbestos pipes) of the water project that could not be accounted for. Allegedly, this money was diverted to the training of staff without the prior knowledge of the people. On the other hand, one Kumbo Urban Council official explained that the aid from the Canadian government could not be accounted for because the aid was managed by a Canadian company that did the repairs: "there was an implementing organization that came from Canada with engineers; they were the ones who did maintenance of the project in 2009 to 2012" (6, p. 5).

This money that could not be accounted for, prompted the community to accuse the KWA of lacking accountability. The lack of accountability led to the accusations that those responsible for the water project were enriching themselves to the detriment of the consumers. One community member stated, "I see that some people are getting rich from the water scheme, while others are suffering" (7, p. 3). The aforementioned grievances contributed to the uprising against the Kumbo Urban Council and the

government administration, which led to the fourth water crisis.

### 5.5. Maintenance

Maintenance turned out to be a theme consistently mentioned during the interview process. By "maintenance", participants meant the preventive measures used to address issues affecting the water supply. This section will explain the various sub-themes within the category of maintenance, such as technological choices and financing, to help explain what interview participants meant by maintenance.

#### 5.5.1. Technological choices

Technological choices, in this case, referred specifically to the types of pipes used during the construction of the water scheme. The technology used during implementation raised questions about the sustainability of the water scheme. For example, asbestos pipes used for the water system have expired and these pipes are no longer available on the market. The pipes needed replacing to ensure the health of the community. One KWA water technician noted that: "the main problem is that we are thinking about how to change these pipes and also remove the installed pipes from the main roads. Once we do that we are sure that this water can actually be sustainable" (P 11). Yet, the technology that is too intricate and costly to replace challenges sustainability, as noted by a Council authority: "the first challenge is the aspect of lack of enough funds especially for rehabilitation of the scheme in order to ensure that asbestos pipes are completely eradicated. That is the major challenge to us" (P 14). A Nso Community Water staff member also asserted that ignoring this problem will destroy the water scheme and will directly affect the health of the community members.

The water crisis that has consumed this project for a long time and the absence of a timely resolution will hinder the smooth functioning of the Kumbo water project, and is likely to affect its sustainability, as recounted by one Nso Community Water staff member: "if the conflict persists and the administration does not intervene, it may affect sustainability of the scheme because, from our experience, most punctured pipes are caused by this conflict" (P 20). As a result, a Muslim community representative suggested the broken pipes be repaired immediately to avoid leakages because treated water was for

consumption and not for waste. Also, road maintenance technicians and the Council should work in collaboration with the KWA management team to reduce broken pipes and avoid leakages.

The Kumbo water project is the main source of potable water for the Kumbo population. The technology used for such a project should serve the best interest of the water users in terms of the material used and the quality of installation. In the case of the Kumbo water project, the pipes, which are more than sixty years old, are expired and causing so much animosity in the Kumbo community, in addition to exacerbating maintenance problems and, therefore, the challenge to the sustainability of the water project.

**5.5.2. Financing**

This theme refers to the availability of funds to sustain the water scheme. The Kumbo water scheme suffered from an insufficiency of funding, and the capacity of the KWA to afford necessary services was limited.

Due to inadequate funds, extra material was reported to be a frequent problem in sustaining maintenance. One student reported that "we cannot sustain the water without money. Money is needed to change the pipes, to maintain, and to do other things. That is the first challenge" (P 13). This is made particularly evident when repairs were delayed and one participant doubted whether the water project will be sustainable: "we delay with the repairs because we do not have materials available for the repair" (P 19). Few participants alleged that even when money is available for repairs nothing is done.

One staff member of the KWA repudiated claims that there were insufficient funds to carry out repairs and contended that there were timely repairs of broken pipes to preserve the water and make it sustainable: "if a pipe gets burst or if there is any leakage, we do not take long to repair it" (P 11). He indicated that other factors delayed the repairs of broken pipes: "what keeps us from repairing it immediately is the type of materials we need to use. There was a pipe that had a problem and water had flown out for a long period of time because what we needed was not there" (P 11). This explanation is supported by one Nso Community Water staff member who argued that there were available funds for the repair of broken pipes: "if you look at the number of people using the water and the amount of money

you pay; it is possible for us to sustain the water" (P 19). Thus, the sustainability of the Kumbo water scheme is possible because of the readiness of beneficiaries to pay for services.

### 5.5.3 Pricing or water rates

Pricing of water triggered the questions about the sustainability of the Kumbo water project. Water rate plays a key role as the price charged for water has to be sufficient to cover at least operations and maintenance cost, and if possible, cover subsequent replacement cost. One community member alleged that water was too costly and unaffordable. The inability to pay for water charges made it difficult for the KWA to secure funds for maintenance. A Kumbo Urban Council official refuted these allegations and argued that the community wanted water for free: "the people of Kumbo believe that they have rights over the control of water. At the individual level, they don't think about the state any longer, they don't think about the council inclusive. So, they think people can get water for free" (P 14).

However, one interview participant maintained that for several years the community had been paying high bills for water maintenance, yet there were still problems with securing funds for maintaining the water system. The inability by the Kumbo Urban Council to supply free water brought a lot of discontent and accusations of corruption. Because of the high prices charged by the KWA, it become questionable if the project would be sustained because high prices reduce the number of people who pay for water supply, send people back to the valleys for untreated water, demotivate the community to offer voluntary labour during cleaning of the catchment area, and reduce money for maintenance.

The community claimed they were paying a lot of money for maintenance and nothing was done, while the KWA staff argued that repairs were done timely except when the material needed for repairs was unavailable. The willingness to perform repairs and ensure the availability of needed materials is fundamental to achieving sustainability. The arguments from the participants only demonstrate how challenging it is for repairs to be done and sustain the Kumbo water project.

## 5.6. Population explosion

The population explosion in Kumbo was another theme that emerged from participants' responses and indicated a growing concern that the scheme might not supply enough clean water to a large and

growing population. The massive rate of population growth and subsequent increased demand for water services had greatly affected water supply in Kumbo and has resulted in water stress and rationing.

Added to rapid population growth, the lifetime of the water scheme and the authoritarian forms of political interventions in water governance by the SNEC and imposing laws that do not reflect local realities, the water systems supporting Kumbo had deteriorated tremendously. One teacher indicated that "we are talking about the water scheme that was laid down around the nineteen sixties, the population has increased, and the number of buildings has increased. The need for water too has increased but they are still using the same catchments that were made at that time" (P 9). Thus, the population growth rate was not matched by the quantity of water supplied. A government delegate looked into the future of this issue: "looking at the rate of growth of the population of Kumbo, I don't think within the next twenty years this scheme will still be viable" (P 3). Despite the fact that other water sources had been added to the catchment area, the pressure of the population on the water project was so intense that part of the community kept searching for alternative sources to improve the quantity of water to meet their needs. For example, a report on the KWA crisis of September 11, 2015, indicated that "the Njingari water source and the Kisaman booster line have increased the volume of water to take care of the increasing population of Kumbo". Also, the Bingo Baptist Hospital tapped an additional source of water to satisfy the patient population.

Although there were growing concerns among the interview participants of the sustainability of the Kumbo water scheme, alternative sources of water are being found to supplement the water shortage. Also, water rationing was a strategy used to make sure everyone had water in the growing population. As such, the inability of the stakeholders to plan, fund, and manage water structures to deliver water in a quantity relative to population growth signified another threat to the sustainability of the water scheme.

### 5.7. Water scarcity and rationing

Water availability was a sub-theme that emerged because of the recognition that climate change was real and affecting the quantity produced. The Kumbo community depended solely on natural resources that are influenced by climate change. The participants recognised these challenges and had

developed measures to mitigate these threats. Despite all efforts, there were still shortage problems. This section discusses water quantity, scarcity and rationing as a strategy to sustain the water scheme.

The Kumbo council had initiated water rationing as an interim measure to preserve water at the catchment during the dry season. Interview participants discussed water scarcity in terms of the need for conservation and restrictions. According to a KWA staff member, water rationing had been an operational measure in conserving water although it has not proven to be an effective or complete solution. Water rationing was more of a water stress management plan that sought to mitigate water scarcities especially to those areas that are on the elevated ground where water supply was problematic unless water rationing was employed.

Water shortages in the Kumbo community compelled water restrictions as clean water was used for gardening, car washing points, and for construction. One government delegate acknowledged that "these small projects or activities are bound to cause problems, so in order for the scheme to be sustainable, management started looking for ways to preserve this treated water" (P 3). But, the *Newspaper of the National Bishops Conference of Cameroon* of November 4, 2011, revealed that "the management of Kumbo Water Authority is still working on measures to step up water supply in Kumbo because acute water shortages in the dry season remain one of Kumbo's perennial problems". Also, catchments are being enhanced and booster systems being developed to solve water shortages in the dry season in Kumbo.

Many interview participants recounted reasons for the growing water crisis in Kumbo. Climate change, the growing population, and human activities around the catchment area were indicated as the main factors affecting water supplies. Before now, there was sufficient water and the Council had not foreseen the need to increase the catchment in response to the demand of the growing population. A Council official indicated that "the Kumbo Urban Council took over the control of the water and from 2008, we were able to control the water till date. People were able to have water even as frequently as possible. With time, we started having a series of fallouts" (P 14).

In the search for more water, many small schemes at the periphery of Kumbo created more problems. One Kumbo Urban Council official observed that the "crisscrossing of pipes became a huge problem to the authorities who were not able to identify pipes belonging to each water project" (P 14). The crisscrossing of pipes became another threat to the sustainability of the water scheme.

Based on the discussion with interview participants, it can be deduced that the water scarcity in Kumbo is mainly man-made and partly the effects of climate. The water crisis spanning over five decades, human activities around the catchment area, delays in repairing broken pipes, and income-generating activities such as gardening, car wash points, and construction have contributed to the water shortage and depict the Kumbo water project as unsustainable.

**5.8. Aid dependency**

The sub-theme of aid dependency refers to the stakeholders' reliance on external funding. Dependency on both foreign and domestic aid was identified as an issue that threatened the sustainability of the Kumbo water project as the project could not be sustained solely on the income the project generated itself. Hence, dependency developed on both domestic (from elites) and foreign aid. A KWA staff member analysed this dependency as: "we can say that 75% depends on foreign aid and 25% from the community" (P 10). This high level of dependency prompted one legal adviser to question "can we really in this present era rely on the goodwill of people to run such a water scheme, what happens if there is a short supply of this goodwill?" (P 21). The justification of this dependency stemmed from the ideology that since the scheme was a community project and was not for profit, it was their responsibility to seek aid from within and outside of the community. The call for more aid was reiterated by a KWA board member: "so we did not stop inviting our friends from Canada to help us" (P 4). Participating in this research was seen by one participant as a way of soliciting more aid from the international community: "maybe people will help us in financing this water project through this research" (P 6). Furthermore, the Canadians were implored to intervene and take decisions that will help solve the crisis threatening the sustainability of the scheme.

Whereas a few participants in the study reported that the water scheme's dependency on external aid and was not sustainable, a Nso Community Water staff member suggested that the project's proceeds could sustain the water project: "with the money collected from water bills, after paying the workers, the rest can be able to sustain the water" (P 20). There were divergent views on the issue of sustaining the water project in the community. But, based on the difficulties in raising money for rehabilitating the water project, the sustainability of the water project remains uncertain from the funding perspective.

**5.9. Party politics**

The study participants and local newspapers revealed that the water project became highly politicised. For example, The *Focus Online* of July 24, 2016, explained that the main opponents in the most recent water crisis were members of political parties (Cameroon People Democratic Movement - CPDM) and the opposition party (The Social Democratic Front - SDF):

> although the water crisis is far from being a political issue, it will not be a gross exaggeration to insinuate that it has political undertones taking into consideration that the main rivals, Mayor Njong Donatus Fonyuy and HRH Sehm Mbinglo I belong to the SDF and CPDM respectively, parties that animate the political scene in Bui division.

The same version of the *Focus Online* explained the political inclinations of the Mayor of the Kumbo Urban Council and the Paramount Chief. The Mayor of the Kumbo Urban Council was considered the pioneer coordinator of the SDF Investiture Committee and Mayor of the Kumbo council for over a decade while HRH Sehm Mbinglo I was a member of the Central Committee of the CPDM. Taking into consideration that the majority of the Kumbo community supported the Fon's position during the water management crisis, critics were quick to see mass movement from the SDF to the CPDM. The *Cameroon Postline* of August 27, 2016, reported that "while others have quickly faulted the government administration as having fueled the crisis for personal gains. Some simply expressed fear that the politics setting into the crisis might soon reduce Nso land to rubbles".

This political divisiveness caused a great deal of discontent among the community members who felt disempowered as a result. A Kumbo Urban Council official claimed that political think-tanks, such as the Paramount Chief, used the water crisis as a political weapon to discredit the leadership of the

Council so as to emerge and take over the Mayor's position. Discriminatory practices were observed with the Kumbo Urban Council and everything had a political connotation. One community leader of the Kumbo community alleged that:

> the water has been politicised and I find that all the workers in the water project are militants of SDF. If you belong to the CPDM party, they will kick you out. Unfortunately, here, we have only CPDM and SDF as political parties. Why should it be so? Members of the Board are militants of the SDF. Politics is affecting the water scheme (P 12).

According to a Council authority, people from the opposing party used the media to castigate the Mayor, the Council, individuals because they wanted to take over the Council, and consequently the KWA.

The political dimension of the water crisis is interesting because of how people's allegiances largely remain with the Paramount Chief despite the community's usual tendencies to support the SDF. Before the water crisis, the SDF was the popular party in Kumbo represented by the controversial Mayor. The Paramount Chief, on the other hand, supporting the less popular party gained the support of 95% of the population when it came to the water crisis. However, one community leader claimed that the water scheme was used for personal gains and to score political points. One CPDM affiliated legal adviser further accused the Council authorities of using funds from the water scheme to finance their political campaigns as evident in the comment: "they take money from there (the Kumbo Council) and do their campaigns. So we are in an unfortunate situation where the mayor of the council is at the same time an SDF militant" (P 21). The Kumbo community was angry that one of their own community members (the Mayor) took their water and used their money against them. They wanted control over the Kumbo water project to be handed back to the Kumbo people as well as the money collected and wasted over the years.

Third parties (neither supporting the Paramount Chief nor the Mayor) shuttled between both parties either for personal interest or to score political points. The *Focus Online* of August 2, 2015, reported that "while the Fon and the Mayor are disemboweling themselves in a gory public spectacle some individuals who are seeking personal aggrandizement and some politicians seeking political gains are fueling the crisis rather than trying to solve it". One participant was outraged at the manner in which some individuals misdirected and misinformed the public. With each party accusing the other of using

the water project for political maneuver, the social pressure caused by these divisive politics undercuts efforts necessary for the sustainability of the Kumbo water project.

**5.10. Summary**

This chapter presented the major themes that described the sustainability of the Kumbo water scheme. It detailed what interview participants perceived as the main challenges affecting the Kumbo water scheme. There are eight themes listed here: ownership claims, climate change and environmental protection, management and control, maintenance, population explosion, water availability, foreign aid dependency, and party politics.

This chapter revealed that stakeholders were more interested in the power struggle and benefit accrued from the water scheme than ascertaining the sustainability of the project; this is because the project survived four huge crises as described in Chapter Four. Most of these challenges were a product of stakeholders' power struggles to control the water project. The struggle for control resulted in management problems, maintenance issues, and financial disputes to the neglect of the water catchment. External factors such as climate change, population explosions, and technology choices intensified these challenges.

The growing scarcity of potable water in Kumbo due to the increasing demand for water and a changing climate is gradually perceived as a major risk for the sustainability of the Kumbo water project. New water sources to combat the water scarcity that brought about new challenges, such as crisscrossing of pipes, are calling for urgent attention. The fact that water shortages are not only caused by the effects of climate change and population growth gives the Kumbo Urban Council and the KWA reason to understand that the situation can be changed. Robust decision-making to combat corruption in the Kumbo Urban Council and the KWA, secure financial sustainability, a cohesive community, and improved participation are necessary to change the uncertainties of the Kumbo water project. A sustainable Kumbo water project is of utmost importance because adequate water supply in quality and quantity is a crucial requirement for health, socio-economic growth, and the general well-being of the population. Also, solutions such as the planting of water-friendly trees in the catchment area, exploring new water sources,

and water rationing are important steps to ensuring a sustainable Kumbo water project. However, more actions have to be taken in resolving the management issues by auditing the KWA and making prompt repairs of broken pipes to avoid leakages. The next chapter will discuss the social and economic benefits of the project on the lives within the community and illuminate the connection of the stakeholders in facilitating or hindering benefits from the project.

# Chapter 6: The Socio-economic Influence of the Water Project

This chapter responds to the main research question and describes seven major themes generated during discussions with study participants. These themes included: alleviation of suffering, psychological satisfaction, health, education, water quality, gender, and income generation. The analysis of these themes will provide insights into the influence of the Kumbo water scheme on the social and economic aspects of life within the community from the perspectives of the study participants. Stakeholders' roles in enabling or hindering the benefits will be highlighted as the analysis progresses. The chapter will conclude with a summary of the main case.

## 6.1. Social effect

Major themes related to the social effects of the water scheme included alleviation of suffering, health, time saved for education, psychological satisfaction, water quality, and gender. In the subsequent analysis, these themes will be supplemented with information obtained from reviewed documents for resources about the water scheme. A comprehensive analysis of information from various sources provides an inclusive picture of the benefits accrued from the water scheme.

### 6.1.1. Alleviation of suffering

In this study, "alleviation of suffering" referred to the relief of the population from going down the valleys to fetch water from the streams following the initiation of the Kumbo water scheme. The provision of water in the Kumbo metropolitan area was a planned attempt to alleviate suffering in the community. The community felt entitled and asserted their right to an effective and functional water scheme. Participants narrated untold suffering related to fetching water prior to the scheme. A community leader explained what the absence of pipe-borne water was like in the 1960s:

> but before this water came we used to go and fight wherever we have a source because there were only two water sources for the whole of Kumbo. The first one is on the road going to Tobin and the other one was at this end of the town. You needed to go there and see how we were fighting to carry water (P 12).

However, travelling long distances to fetch water was not the problem in Kumbo as it was in other areas. The main problem according to this participant was waiting in a long line to fetch water from a

single source. When the people grew impatient, fighting erupted and only the strongest collected water: "the water source was here in the town but the struggle to carry the water was not an easy task" (P 12). Also, those who went to fetch water did not only return with wounds, they lost their water containers in the struggle: "and at that time we did not even have buckets; we used to carry water with calabashes and clay pots and in the course of fighting some of our pots and/or calabashes were broken and we finally went home empty-handed" (P 12). The same community leader narrated that sometimes the fight did not end at the water source. It continued into the community and school. Sometimes parents became involved and that was how the conflict spread: "when this water came, the fighting then stopped and people were living happily" (P 12). The women corroborated this narrative on the difficulty of fetching water. The challenge was not only the struggle in carrying the water, but also transporting the water safely home. Containers used to fetch water were fragile and needed careful handling. Even at home, the containers were not safe:

> at first, we used to carry water in calabashes. When you go to the valley to get water before we arrived home it fell and got broken and we have to go to the house to take another one to carry water. At home it was the same thing as calabashes containing water can be broken by the kids while playing and you have to go and carry it again (P 2).

Children were affected the most by this struggle. While at the stream, children faced long waiting times to collect water and often got involved in the brawls. At home, they were scolded by their parents for taking so much time to fetch water. That time spent carrying water was affecting the children in many ways. The community leader described: "the child was the first to be accused by the parents because they did not know the struggle he or she had gone through. They will accuse the child of playing and delaying with water without knowing the stress the child had undergone in the course of getting water" (P 12). This adversely affected the children's motivation to fetch water for the household.

Participants narrated that the availability of potable water brought happiness to the community. The community leader explained that "after some time, as the water was now available, people were drinking and were happy. If you happen to stay here for a while you will see how dry this land is" (P 12). Participants recalled how reassuring the water scheme was to the community. Accessibility and

availability were ensured. A woman highlighted that “the public taps are not far from our homes and we do not go to the valley to carry water again” (P 2). Since the initiation of the water scheme, the Kumbo community has stopped fighting for water. An authority of the project revealed how the community’s suffering was alleviated and illnesses had been averted.

The importance of the Kumbo water scheme could not be underestimated, as portrayed in a community leader’s viewpoint: “without water in your house, you see that life is quite a different thing” (P 12). However, the positive influence of the water scheme on the community was short-lived. At the beginning of the scheme, standpipes were littered all over the city. The city had more than seventy standpipes along the road. This was significant to the community because everybody had access to clean water, especially, those who could not afford connection to their homes, to their farms and for visitors to the community. These standpipes were systematically removed each time new management took control. The Muslim representative recounted that “when the public standpipes disappeared people resorted to the valleys and streams around to get water, exposing them to water-related diseases” (P 9). Pipe-borne water in the Muslim community was also a relief based on their religious practices. In the Muslim community, water is used five times each day for cleansing before devotions, as described by a Muslim representative: “when there are water crises in the Muslim community, it becomes difficult. So water is very important for their upkeep, for their religious duties” (P 9). Nonetheless, this relief was short-lived.

A Council authority elaborated on the reasons for eliminating the public water points: “we wanted to discourage the aspect of standpipes” (P 14). The system in the Western countries was adopted by connecting water in all homes to ensure sanitation and hygiene. The water charges were reduced to make it affordable to poor families. The authorities argued that this strategy was intended to curb water contamination during collection from public taps. A government delegate also argued that “you should note that in Kumbo for many years we do not have public standpipes. Most houses have their internal water. It reduces a great time for children to go fetch water because we hardly have shortages” (P 14). The Muslim community was particularly affected by the removal of the public pipes. A Muslim

participant explained the significance of the scheme to their daily lives and how challenging it was after the removal of the standpipes:

> in the Muslim community, we had more than 10 standpipes to supply the community. As the Kumbo population was increasing, we thought they were going to increase these public water points, rather the standpipes were reduced and gradually disappeared because the management team was the council, prices were rising, and no new connections were made (P 9).

It was further detailed that the Paramount Chief had reopened five standpipes and had planned to open more, but the Council was blocking the process.

### 6.1.2. Psychological impact

Psychological influence is another critical theme that emerged during the discussion to elicit the mind-sets of the community regarding access to clean water. This section will discuss participants' psychological satisfaction with the Kumbo water scheme relating the current situation to the life they lived before the water scheme was initiated.

The participants recounted incidences of women's survival when there was no pipe-borne water. When the women travelled down the valleys to fetch water, stress and anxiety were high for the whole community. Women and children spent most of their day queuing up and fighting to collect a calabash of water. This water they fought for did not come from a safe, clean source. This suffering came to a halt in 1974 when the Kumbo water scheme went operational. The water was treated, chlorinated, and well-filtered. This was a source of psychological satisfaction for the community, as narrated by a Muslim representative: "when you are sure that you have water you are mentally settled. When people do not have water they are worried. When water is regular and of good quality, everybody is assured that they have water" (P 9). The psychological component of this water project was further illuminated by this comment of the community leader:

> psychologically, we really need water and what is the need to have this water and cannot enjoy it? It is better not to have it. This water comes out from the ground and it is a gift, first gift that God gave to mankind. Imagine you come home late after the day's work and you don't find fresh water to bath with, you will not sleep well. We don't know what is in this water as we are talking because once you pour it on you, you feel different. I think for that purpose water is the first necessity before any other thing (P 12).

One woman described being able to have a peaceful night's sleep when clean water was available: "psychologically when we are sleeping we know that there is water around to use so we do not go to the streams and the valleys" (P 2). A community leader recounted that peace reigned in the community with the existence of the water scheme: "now that we are drinking the water always there is no problem. It has introduced peace for the community. That is the only positive part that I can mention for now" (P 12). Nonetheless, the peace was short-lived because of the ongoing water crisis spanning decades. The community was alienated, neighbours became enemies, friends avoided each other because they did not agree on the water issues. A community leader reported: "you can only live happily with who speaks the same language with you over the water issue. We were even thinking of going back to the Canadian Embassy to see if they are aware of what is taking place" (P 12). It became a huge problem for the Kumbo community.

The provision of potable water in schools came with psychological satisfaction for parents as the standpipes provided safe water for consumption in school. One woman asserted that the provision of piped water saved dresses and laundry soaps from being carried away by the river: "when there are dirty dresses we use water from the tap to wash and we do not go to the valleys like we did before. At the stream, the water carried away the soap but now we use soap without any fear" (P 4). Women also found it satisfying using water for household chores and consumption: "though not clean at times, we believed it's good for drinking because it is treated" (P 2). It alleviated the burden of fetching water for the family.

Notwithstanding the above narrative, a few participants thought the water scheme endured many water conflicts, yet hindered the ability to increase the benefits. The constant seizure of potable water raised concerns and heightened anxiety. They would rather reflect on other issues that affect their livelihood than be concerned about water, which is a basic necessity as indicated by a Muslim representative: "most people here are not very satisfied with water so they are not psychologically stable. They have doubts especially during the dry season when water is rationed if they will have water or not. That is why they start to go for other sources in search of water" (P 9). Even the colour of the water proved to be psychologically disturbing because it was taught in primary school that coloured water was

unhealthy. A student explained: “now when you see color in the water you are afraid that you might be sick. I cannot say that we have had any case of any water born disease. We only have a psychological problem that water should not have any color” (P 13). All participants included in this study reported some psychological relief with the emergence of the Kumbo water scheme, although, some issues were reported as psychologically disturbing.

### 6.1.3. Hygiene and health

Hygiene and health were prominent themes that resonated with study participants. It should be recalled that the Kumbo water scheme was funded to relieve suffering and improve the health of the community. This section will discuss how adequate water supply is fundamental to hygienic practices.

Accessibility and availability of potable water for beneficiaries ensured household and personal hygiene. A community leader recounted the periods prior to and after the water scheme:

> when water is in abundance, people are no longer dirty because we use the water to clean up all the dirt that is around. When there is water what will stop me from washing my hands, what will stop me from washing my pants, toilet and other things and even drinking fresh water? There is nothing that will provoke you to practice dirty habits (P 12).

Struggling for potable water in the 1960s was described as a hazardous period in the lives of those who lived it. Prior to the Kumbo water scheme, water was collected from one stream shared with animals. A retired government authority noted: “before, people used to go down to the streams and share water sources with animals and other things. I think when the water project was constructed the health of the people improved” (P 5). The scramble for the contaminated water resulted in sustained injuries, which increased children’s absenteeism from school and incurred hospital expenses. A community leader explained his experiences from when he was young: “I have a scar on my head which I obtained from fighting for water. So, in that case, the cost of healthcare was increased” (P 12). Money that was to be used for other household expenses were used to pay hospital bills.

The minutes of a meeting with the Governor of March 3, 1974, disclosed that, prior to the Kumbo water project, cases of diarrhea and dysentery were registered in hospitals. A Council official confirmed that since the existence of the water scheme, the health of the community was assured: “with potable

water, we do not have diarrhea, we do not have other diseases as typhoid, as we used to have before. It has reduced drastically because of the nature of the water here in Kumbo" (P 14). A KWA staff explained that there have been cholera outbreaks in towns like Yaounde and Douala and other parts of the country, but Kumbo has never suffered from such outbreaks. The community leader further emphasised the attention directed towards treating the Kumbo water: "we treat the water before drinking and samples of it are usually examined at Mutengene to see whether the cleanliness of the water is maintained" (P 12). He continued that: "Sources of water need serious care and now that we have this water available we do not have cases of dysentery" (P 12). Interview participants confirmed that the Kumbo Community was happy to have the supply of potable water.

Hygiene and sanitation constituted some of the benefits realised from the water scheme. The provision of clean water to Kumbo enabled better hygiene and sanitation practices in homes and schools. A teacher discussed the use of water for cleaning classrooms and toilets, consumption, and watering unfinished floors to reduce the dust: "in school, if you sweep without water you are punished because you raise dust that will cause air born diseases" (P 9). Whereas, prior to the Kumbo water scheme, the routine was that students were obliged to fetch water from the valleys, streams, and other sources to clean the school. The same participant asked: "can you imagine how difficult it was for children?" (P 9). These life-long hygiene practices instilled in children in their early education became habits they maintained as adults and passed on from generation to generation. Furthermore, in nursery schools, a teacher underscored that the water scheme improved hygiene in the kids' lives. The teacher explained that kids play a lot and are inclined to falling in mud and soiling their clothes. The availability of water facilitated the cleaning of soiled clothes, the environment and provided drinking water for the children: "during school periods if you come here you will not know that a kid can be dirty. It is the use of the water that is making them clean. If there is no water you find so many of them dirty" (P 15). Another teacher also highlighted the influence of the scheme on the hygiene and sanitation practices in the household: "we now wash things every day. When there is a shortage and we go for two or three days without water,

everything is messed, flies and whatever. Water is life" (P 16). Water rationing enabled the Kumbo Community to clean their environment on a continuous basis.

Poor governance led to the perception that water maybe of poor quality. For instance, the community questioned the quality of the water considering that, over the years, repairs and water treatment were inadequate. A teacher expressed dissatisfaction with the council: "I think in Kumbo, one of the things that made us annoyed with the council was when water became dirty" (P 8).

The Kumbo water scheme ensured health by preventing water-borne diseases and enhancing hygiene and sanitation practices with the provision of clean water for consumption. However, when maintenance was inadequate, the community got worried if the water was safe for consumption.

### 6.1.4. Education

This sub-theme examines the educational benefits resulting from the water scheme by comparing the periods prior to and after initiation of the project.

The suffering of living without pipe-borne water was evidently recollected. Children used to go to the valleys to fetch water, which resulted in fighting from the struggle to collect water from a single source. The most vivid stories were those told by one community leader: "when you find yourself in the long line where you spend much time, longer than the time you took to get to the water source, then you understand the sufferings of our students" (P 12). The children's ability to put in the required time for studies was affected. Most children got into trouble with the school authorities for arriving late because they had to fetch water to clean up to go to school. A parent narrated that in some families, children set off to fetch water at five o'clock in the morning because arriving later than this time, there was always a long queue and it was difficult to collect water. Sometimes, when the child finished fetching water, it was too late for the child to study or the child was too tired to read and do assignments. A teacher explained that:

> water has brought peace to everybody. You know that if there is no water, children will equally not go to school because of lack of water to take a bath, parents use the water to prepare their food, clean them up, before coming to school they eat clean food because they have clean water. For that everyone is healthy (P 15).

Furthermore, the presence of standpipes in all schools was helpful during recreational activities. For example, during school games, occasions such as the Youth day celebration and National Day celebration, water is available for the students and the entire population. The authorities of the KWA ensured that children would be closer to water because collecting water is often problematic for children as they do not only collect water for household use, but also for school use.

Absenteeism was problematic prior to the water scheme. Students were absent from school because they had no water to bath in beforehand or returned late from collecting water. An additional reason for absenteeism included ill health from water-borne diseases. After the initiation of the water scheme, a Muslim representative explained that "it has improved on their effectiveness in school. No parent has withdrawn the child from school to stay home to fetch water. When there is water children do not move around looking for water, they concentrate on their school work" (P 9). Also, health education received in school played a significant role in children's lives as they integrate those lessons into their daily lives, their families and the community in general. For example, a teacher explained how she integrated the topics of hygiene and sanitation into her lessons using the Kumbo water project as a demonstration:

> when it is a topic concerning water we go down to the streams carry the water and then carry water from the Kumbo water authority to differentiate the two types of water; whereby one is treated and the other is not. At times we find germs inside water that has not been treated. With the Kumbo water, we do not find such so it is very helpful when it comes to studying (P 15).

The Kumbo water scheme provided training opportunities for students within and outside of the community. A teacher explained that "students come to the office to do internships. By so doing, we give them details about the water authority so that they can have a knowhow about the project, the management, the financing and whatever. Some learn how to handle water sources" (P 15). Through this approach, a staff member noted, the capacities of the students were strengthened and their employability enhanced. It also provided opportunities for informal training to learn environmental education. Farmers around the catchment area, for example, were trained on conservation farming and income-generating

activities to improve their living conditions. Facilities such as a demonstration farm, storage barn, and crop-drying facilities were created for this purpose.

Prior to the KWA, the community was hit with a series of crises, a daunting catalogue of problems, including diseases and interrupted schooling. The KWA's success in increasing access to clean water brought new hope to the Kumbo community. The provision of standpipes in schools brought a sense of dignity and self-assurance. This analysis revealed that water provision is a key factor in the battle to mitigate extreme poverty and to build a sustainable livelihood in the Kumbo community.

### 6.1.5. Water quality

The "water quality" theme emerged in portraying the vital role of the Kumbo water project within the livelihood of the Kumbo community. The interview participants appreciated the unique influence of this water project on their health. Participants acknowledged the role of the KWA in providing technical assistance and clean water to the people of Kumbo. For example, one teacher confirmed that the water was well-treated and they felt save consuming it: "the water has never caused any waterborne diseases" (P 15). A Kumbo Urban Council authority observed that "the water became clean because of the reduction in the agricultural activities in that area since we were able to use our position to acquire a catchment area at the place called Kigali" (P 14). The Council facilitated the displacement of the Yeh inhabitants from the catchment area to a new location and appeased the displaced people with some compensation. The Kumbo Urban Council authority also explained that "the council compensated the people there and handed the water and catchment to Kumbo Water Authority" (P 14).

The majority of participants acknowledge the quality of Kumbo water was presented as evidence of the potable water in the country, comparing it to bottle water. One government delegate claimed that neighbouring villages all gathered to collect water from the Kumbo water scheme and noted that: "water itself is something that in this country I am sure that only Kumbo can pride itself to have a water scheme like this that all year round the water is clean" (P 3). The same government official suggested that if the quality of the water was poor many people would have died: "I believe that the water quality is really positive to the Kumbo man and for the few analyses that we have carried out in Baptist centre in

Mutengene, centre Pasteur in Yaounde the water has not posed any danger to the population of Kumbo" (P 3). A member of the Muslim community also confirmed that the scheme was very important to the community owing to the fact that outbreaks of water-borne diseases had been eradicated: "I have never heard of such crisis here in Kumbo since I grew up. I am 40 years old now" (P 9).

Also, the annual management report of the KWA of December 26, 2014, upheld that the quality of the Kumbo water was of standard quality based on the test analysis conducted in 2013 and 2014. According to this report, the administrators received unquestionable results for the water analysis from Centre Pasteur in Yaounde but indicated precariousness in the quality of the water because "an unpleasant green grass (algae) regularly appears on the surface of the water in all the three filters. From our own judgment or point of view, we attribute this phenomenon to the aging nature of the sand in the filters which is gradually forming a natural habitat for the growth of this plant". Nonetheless, this precarious condition is managed by regularly emptying all filters and scraping the grass each time it appeared.

Even though many participants had positive perceptions of the quality of the water, a few were concerned with the water quality. A business person observed that: "If you look at the water, at times you see it reddish in color as it is left to settle, the soil or the mud settle down with it" (P 17). The main problem before the water project was quality of water, as perceived by another business person: "Now, the issue is not the quality of water but the extortion of people, KWA receiving huge sums of money from people and not providing quality water" (P 18). There was the perception that the community was paying too much for too little.

A few interview participants expressed skepticism as to whether the water was treated because those who were supposed to clean the water were all involved in the water crisis. A construction worker stated that: "at times we stay for four months without putting chlorine or anything in the water. So, it is not the best and there is fear that there might be an outbreak of an epidemic from drinking the water since water is not treated" (P 7). One government delegate was concerned about the cattle market above the catchment area, that it was contaminating the water, and every time that water analysis was carried out, cattle waste contents were found in it: "it is already a source of problems because that shit provokes

diarrhea-related diseases or waterborne diseases" (P 3). The delegate explained that even though the government had advised the Kumbo Urban Council management of the risk of the cattle market above the catchment and advised for the displacement of the market, it was never done.

Perceptions about the water quality were varied. While the majority of participants confirmed the quality as an indisputable fact, a few participants argued that the quality is not reassuring. The Kumbo water scheme was known as the best water project, especially for being reliable, compared to water schemes in other urban towns around Cameroon.

### 6.1.6. Gender

This sub-theme described the project's influence on gender relations in Kumbo and its effects on the livelihood of the community. Observations of traditional practices deterring gender relations are also presented.

According to the history of the water project, the women identified the need for clean water to the Fonlon during their group meeting called the "women of fourteen." This was a priority for the women because of the traditional role of women and children performing water collection for household use. Division of labour was described by a Muslim representative in the community: "when there is no water the woman and her children go long distances to fetch water to cook, and for house chores, while the man brings food to the table" (P 9). The provision of water was also an opportunity to further confine women at home, considered their traditional place by the Muslims. A Muslim man confirmed that: "the first benefit for this water is that the woman is assured that they have to remain at home especially in the Muslim community where the women are supposed to take care of the home most of the time. When there is no water there is a lot of problems" (P 9). According to this Muslim representative, the availability of water at home created an assurance that women would stay at home and perform household chores as tradition demands. This Muslim notable yearned for the continuation of the project so women could perform their traditional role with less stress.

Interviewed participants' responses indicated women were included in the water committee because of their traditional roles as those who fetch water and not by virtue of the fact that they were part

of the community who deserved to be included in decision-making bodies. A KWA board member explained the reason for including women in the water committee:

> we have embraced the woman because we believed that this water project is utilised by women either in their households, in the way they managed or wasted water. After we realised this, we now brought them closer to us and we made sure that in the board a certain percentage, more than 45% of board members must be of the female sex (P 4).

In a project supposedly identified by women, one would wonder why women were not in top positions in an institution they created. One would also question why the women, who are the primary users of water, were not given the opportunity to fully participate in decision-making regarding issues that affect their daily activities. The reason is that, in the Kumbo tradition, women are placed in a subsidiary position. Because of this notion, as indicated by one Muslim representative: "we live in a community that is largely male-dominated" (9), the women were expected to occupy a secondary position:

> in the Nso tradition, women move behind men. If you go to the palace you will never see any house given to women because they are always behind the men. That is the Nso tradition. In my home, my wife supports me in any decision I take. When I say something I am saying it for the whole family (P 7).

This tradition, defined in the household, has emerged within the various institutions in Kumbo, including the water project. This attitude prompted one community member to question: "I don't know why women are not on the board of directors running this water. You see that the sub-chiefs are in control of this water and no woman is a sub-chief. You find only men talking about the water issue and there is no woman" (P 7). A retired government official suggested that since women are the primary users of the water, they should be represented in decision-making positions: "if there is anything concerning water, and we know that in our community women are the ones more concerned with water and the women are not in the level of taking decisions it means they are not part of the water scheme" (P 5).

Even though the aforementioned narratives blamed traditional practices for gender domination, there were other participants who clarified that a significant number of women were participating as representatives in water committees and in decision-making. One KWA staff member explained that "in terms of decision making, we have had a good number of women who have been voted to participate in decision making" (P 10). The General Assembly's members were quarter representatives, and women

were among these representatives. In this case, there was intentional gender balance as two representatives came from each quarter; one woman and one man. These people made up the board, and a representative of the board presented the composition of the structure of the water project. The question remains whether these women participated in the decision-making process, though. Women were reported to be very active in decision-making during the General Assembly. A male Muslim interview participant narrated that the Muslim community was represented by a man and a woman: "at the Assembly, they make decisions. If we have proposals concerning the water, she will represent the Muslim community. If there are votes at the assembly she will vote on behalf of the Muslim community" (P 9).

Also, gender was reported to be an important consideration in chairing meetings in the General Assembly. One Kumbo community leader explained that "if the chairperson of the meeting is female, the vice chairperson will be male and vice versa" (P 12). However, women interviewed in a focus group questioned whether the policy of quarter representatives still existed, especially during the crisis, because people were not informed of the events of the crisis. A member of a women's group also stated that "pertaining to the General Assembly we are told that in each quarter two representatives are elected one a man and the other a woman representing the committee but we are not aware of what these representatives do" (P 2). This shows how detached women were in this project. It became clear that all women wanted at this time was the resolution of the management crisis so that there would be a constant supply of water for their household chores.

Although the majority of the community argued that the Kumbo water scheme positively influenced the quality of the lives of women, it essentially had a greater effect on the lives of men. While women devoted a considerable amount of their time to the project's activities, men's negotiating power increased after the project. For example, there was a significant gender disparity in staff composition. Women were absent from decision-making positions in the KWA and also the newly created Nso Community Water. One interview participant doubted whether "when it came to decision making I don't know whether the management of the Kumbo water authority has women" (P 4). One KWA board member interviewed indicated that 25% of women constituted the board of directors of the KWA and

50% of women in the General Assembly. The female staff of the project occupied only those positions traditionally branded for women, such as secretary and financial secretary. There was only one female technician. A KWA staff stated that "there is a technician who is a woman who works in the field. She is able to change pipes, do the plumbing, fix meters and do the reading actively. We are planning to have more women who are technicians" (P 11). It was clear that the number of women in high-income earning positions was limited.

Male domination in the Kumbo water scheme was obvious, and the male staff took no interest in understanding gender roles, gender relations, and the factors affecting those relationships in order to develop an approach that involved more female technicians. Of the 18 staff members of the KWA, more men than women were employed in general, and particularly more male technicians were employed, which were the higher income earning positions. Even the woman hired as a technician was not seen in the field, as observed by the Muslim community representative: "I don't see women plumbers. I know all the women that are in the offices they are only working in the office. This is something that is not good, women need to be encouraged to study so that they can be able to know how they can increase water programmes" (P 9). Men comprised the majority engaged in these positions because they are regarded as labour-intensive and appropriate only for them. This can be interpreted that not all Muslim community members having the same view with regards to women's role in water projects.

Women were active participants in the implementation of the water scheme, in digging the trenches to place the pipes and covering the pipelines. At the same time, they were active in cooking food to support the people who were working. Women also maintained the water scheme by cleaning around the pipes, catchments area, and treatment station; planting water-friendly trees, reporting any leakages for maintenance, disseminating information, maintaining peace, sensitising and mobilising the community. One staff of the KWA noted that "women are the most important people contributing towards the water project" (P 11). Given these enormous contributions from women, one would imagine them occupying top positions in the KWA structure, seeking a gender policy to guide gender activities in the project and a gender balance among staff, but this was not the case.

It is understandable that for a project that was initiated in the 1960s, gender issues were far-fetched in the minds of the implementing organisations. Until recently, what mattered at that time was to get the water flowing and prevent water-borne diseases. Presently, among the donors' requirements for project funding is gender integration both at the level of the project staff and project activities. In the Kumbo project, more male staff were participating in the decision-making positions; the number of male staff was greater than the number of female staff, and the personnel guidelines did not reflect involving more women in both decision-making positions and technical positions. The organisational goals and approaches did not accentuate the strategic needs and concerns of women.

### 6.2. Economic effect

This theme responds to the main research question. It analyses the economic benefits of the Kumbo water scheme and how it improves the livelihood of the people of Kumbo. Reports provided by interview participants on income-generating activities revealed an insight into the influence of the Kumbo water scheme on the livelihood of the community. These income-generating activities included: small business activities, such as restaurants, washing points, construction, hotels, and both on- and off-farm employment opportunities, and the direct effect on the livelihood of the people of Kumbo.

#### 6.2.1. Small business activities

Interview participants acknowledged that income-generating activities increased with the advent of the Kumbo water project. Business leaders explained how their income-generating activities were influenced by the Kumbo water project: "because of this water we are able to do restaurant business, people are able to cook 'sha' (local drink) and sell, and people drink it without fear of the source of the water" (P 17). Also, the business environment is kept clean. A restaurant, for example, will never function well in a dirty environment, declared one teacher: "others like beer sellers if they have no water to flush their toilets at every moment people will not find it very hygienic to use the toilets and the health of the people will be threatened. I think water has gone a long way to keeping the population alive" (P 15). Hotels in Kumbo were reported to be clean and attractive to customers, as indicated by one teacher: "when you enter any hotel in this town you find that it is very clean because of this water" (15, p. 7). The business

community perceived that the Kumbo water scheme contributed enormously to the success of their businesses.

The findings also reveal an increase in car-washing points for income generation. One community member indicated the various income-generating activities that depend on water to function, such as car washing points, cleaning of bikes, and dry cleaning of clothes. If there is no water, people can become unemployed leading to more social problems. Despite the gains made in terms of small business growth, the findings indicated that the water crisis acts as a barrier to the benefits with little hope of a sustainable Kumbo water project.

### 6.2.2. Agriculture

Participants identified agriculture as an income-generating activity that directly contributed to food security and poverty reduction. According to the interview participants, community members owned gardens whereby potable water was used to water vegetables, which were marketed and consumed. This is reflected in the comment of a female farmer: “during the dry season, I have a small garden that I plant vegetables and spices. I carry water from the tap to water. I do not sell. I only use it at home so that I will not go to the market to buy” (P 2). Most participants were aware that vegetable gardening greatly affected water quantity, owing to the fact that watering the garden plants was responsible for the largest waste of potable water. For example, a KWA staff member reported that gardening is not encouraged: “because we experience little water shortages. We cannot encourage people to go in for gardening but for animal rearing. It is of economic importance because animals like pigs, fowls, birds need a lot of water for their upbringing” (P 10). A few participants believed no economic advantage accrued from the project, rather, the scheme was used to exploit them with the high bills they pay.

### 6.2.3. Employment

Participants in the study generally acknowledged that building the employment capacity of the locals was an important aspect of the Kumbo water project. Capacity-building contributed towards skills growth and employment in Kumbo. For instance, two of the KWA employees received training in Canada, which increased their skills in handling the water project. A Kumbo Urban Council official affirmed that

"people have been able to gain employment at the level of KWA. There is staff working both in the office and field" (P 14). Because the project is in Kumbo and the management is in Kumbo, most of those who worked in the water project were locals. The income earned helped to feed their families and helped external relations. One KWA board member indicated that "we have turned around to employ the locals. We have about 18 staff members, and whatever income they are receiving from here goes to help alleviate poverty, it helps them pay hospital bills, educate their children and do a lot of things" (P 4). Increase employment capability of staff members influenced their livelihood.

Furthermore, various business activities have created employment, including washing points, hotels, and restaurants. These people relied on these businesses for their livelihood, reaching out to the needy. A community leader acknowledged that "we really enjoy it and it is like something we cannot do without. We are happy we have water that is good for consumption" (P 17). The water project increased not only the income level of members of the business community, it improved the health of the population.

The critical point in this section is that the Kumbo water project is an essential contribution to many businesses, mostly small economic activities, often home-based activities, where the poor are themselves, businesspersons. Access to a crucial asset for productive activities, including water, is essential to the sustainability of these activities, which can influence the livelihood of the community members and enhance poverty alleviation.

**6.3. Summary**

The findings on the social and economic benefits of the Kumbo water project demonstrated the various ways the study participants perceive the influence of the Kumbo water project. The themes that emerged included: alleviation of suffering, psychological impact, hygiene and health, education, water quality, gender, small business activities, agriculture, and employment.

Although poverty alleviation was the main theme that cut across all other themes, participants' perceptions varied from theme to theme. For example, study participants perceived that the Kumbo community felt the psychological relief of the suffering from lack of clean water when the water project went operational. This psychological relief was limited as suffering had not been completely eradicated.

The water crisis that divided the Kumbo community and the fear that the water might not be sustainable suggests that the KWA management need to pay attention to barriers to a sustainable water project. Alleviation of suffering reduces water-related fights that undermine the social cohesion of the community, destroy livelihoods, and often throw people into poverty. The analysis also explains how the Kumbo water scheme curbed unemployment, empowered small entrepreneurs, and enhanced emerging initiatives that were effective approaches to job creation. In addition to providing income to community members, the jobs strengthened relationships in the community and improved livelihoods.

In many interview participants' discussions, the quality of the water had economic consequences because water-borne diseases were prevented, water-related injuries were averted, and money was saved from hospital bills. The money saved from medical bills was converted to providing children's school needs and enabling the children to attend school regularly. They can attend school rather than admitted to the hospital because they are sick from tainted water or injured after waiting in line to collect it.

The findings further explain that the influence of the water scheme is multifaceted and variable in the experiences of the community members. Improved economic activities are vital to improving the livelihood of the population, but the quality of this influence and the degree to which it creates new opportunities for the poor also matter. Efficient water management can be a catalyst for the economic progress of the poor. This is realistic where water supply contributes to beneficial activities and produces opportunities for businesses in the community. The absence of pipe-borne water creates uncertainty and susceptibility to poverty in communities like Kumbo. Therefore, efficient water management reduces the burdens of the poor by mitigating health vulnerability and the multitude of problems they encounter. It also initiates opportunities that produce income, which enable sustainable livelihoods. Chapter Seven discusses the findings and relates the findings to the framework of the existing literature. Suggestions to improve the efficiency of a community-based water scheme will also be provided.

# Chapter 7: Discussions

This study has examined the influence of the Kumbo water project on the livelihood of the rural poor within the framework of the social and economic effects, the involvement of stakeholders, and the sustainability of the water project (factors identified in the conceptual framework to have an impact on the project) in Kumbo, Bui Division, North West Region of Cameroon, and through a single case study method grounded on Maslow's Hierarchy of Needs Theory, the Theory of Change, and Sustainability Theory, alongside the perception of the Kumbo community with 21 study participants interviewed. This chapter opens with a synopsis of the study results, followed by a discussion establishing the three research questions and findings within the current literature to bring to the limelight exclusive influences for this study from the areas of water quality and health in rural communities. Concluding thoughts and recommendations for future research are presented. The chapter ends with an exploration of the limitations and ethical considerations of the study.

## 7.1. Synopsis of study findings

The study discussed four central themes, including stakeholder involvement, water crisis, sustainability, and the social and economic effects of the water scheme which were presented in the conceptual framework on the impact of the water project. The stakeholder involvement theme intended to highlight the primary stakeholders and reveal the roles of each stakeholder. Participants from the community expressed their perceptions of each stakeholder in enabling or hindering the influence of the water project on the health of the Kumbo community. This theme was in response to the secondary research question.

Within this stakeholder involvement theme, the water crisis was the most frequent issue discussed by the study participants and emphasised the involvement of each stakeholder in the water crisis. Participants explained that the stakeholders did not only cause tension in the community during the water crisis but hindered the sustainability of the water scheme. This can be seen clearly on the conceptual framework of the study which shows clearly that the stakeholders have a direct influence on the financial

resources for the sustainability of the water project. The third theme answers the third research question, which illustrates factors that promoted or impeded sustainability of the Kumbo water project.

Interview participants described sustainability of the water project by identifying systemic and individual barriers to sustainability. It was clear that man-made problems resulted in sociopolitical tension in the community and threatened the sustainability of the water project. These man-made issues were compounded by rapid population growth and climate change. Challenges facing the water scheme were categorised into individual and institutional barriers. The institutional barriers characterised endemic corruption, inadequate funds, and lack of institutional policy for the promotion of sustainability. Individual barriers included the self-interests of stakeholders.

In exploring the influence of the Kumbo water scheme on the health of the population, findings revealed that stakeholders were instrumental to the existence of the water project, and there are enormous social and economic benefits. However, the primary stakeholders created the water crisis that has plagued the Kumbo water project for many years, threatening the sustainability of the project. An unsustainable water scheme will ultimately lead to the loss of all the social and economic effects the water project accrued so far.

### 7.2. Relating findings to the existing literature

This section will relate the findings to the existing literature and in the following sequence: stakeholder involvement, sustainability, and the social and economic consequences. Conclusion and recommendations will follow.

#### 7.2.1. Stakeholder involvement

The results of the study described stakeholder involvement as flawed because of a lack of clarity of stakeholders' roles that encouraged mistrust, lack of finances for engagement processes and logistical expenses, inadequate and undedicated staff with general conflicts of interest, and a lack of political will and leadership by the party controlling the Kumbo Urban Council. The results provided some empirical facts supported by Megdal et al. (2017) that stakeholder involvement in water governance is usually burdened with conflicts when the diversity of interest results in suspicion and non-collaboration. But,

"there is a lack of evidence-based assessment on how engagement processes contribute to water governance objectives" (Akhmouch & Clavreul, 2016, p. 1). Even though conflicts of interest might be the main problem among stakeholders, some instances have proven that stakeholder involvement in water projects can produce efficiency in water governance. Alfredo et al. (2016) established that the use of a one-day participatory workshop designed to acquire stakeholders' perceptions, relations, and inclinations concerning their water supply system was more beneficial for a successful water supply intervention than a rigid approach across the board. Hence, "a significant component of stakeholder engagement, therefore, may involve techniques for reducing conflict" (Megdal, Eden, & Shamir, 2017, p. 2).

This case study sheds light on the funding of the Kumbo project. Through the efforts of a Nso elite, the CIDA financed the water scheme on two occasions. This result agrees with Niyonkuru's (2016) assertion that "in Africa, foreign aid comes in diverse forms: Support of projects of investment, budget support, technical assistance of various projects, debt relief" (p. 1). The first instance of funding was in material form, instrumental in kick-starting the Kumbo water scheme that has survived for over five decades. Communities were empowered to participate in water governance, capacity-building was encouraged, and a decrease in water-borne diseases and the suffering of the population was experienced. The conceptual framework clearly shows that good governance of the water project can lead to improve livelihood and decrease the prevalence of waterborne diseases. Despite the gains made, the water scheme is still struggling in most part due to inadequate funds and mismanagement of limited resources. Meanwhile, Niyonkuru (2016) recognised that good governance and law enforcement are favourable factors of aid efficiency. A favourable political setting can improve accountability, produce efficient policies allowing for transparency and maintain human rights, in addition to abiding by the legal establishment of the state, constitutions and other political administering principles. The principles mentioned above are ineffective in the Kumbo water scheme given that after two phases of funding the community is still expecting the Canadian government to support the rehabilitation of the water scheme. The inadequacy of financial resources is due to financial mismanagement and corrupt practices characterising the KWA.

While aid dependency has decreased since 2000 by a third (12% of expenditure) for low-income countries (ActionAid, 2011), stakeholders of the Kumbo water scheme are still relying on foreign aid for project rehabilitation. ActionAid (2011) argued that "whilst aid is succeeding in contributing to human development, dependency on foreign aid can be more problematic" (p. 16). This situation is questionable for the Kumbo water scheme because the root causes of the dependency have not been addressed. Part of the cause is the undefined roles of stakeholders and mismanagement of the water project funds that resulted in the water crisis.

Also, the effects of foreign technology and foreign concepts introduced to the Kumbo community cannot be underestimated as the community is still struggling to grasp and integrate these new concepts in the water project. Two foreign concepts introduced to the community were sustainability and gender equality. Even foreign technology has put the water scheme in a stalemate, due to the use of asbestos pipes for the water system that have become outdated and are not available in the market, making it very difficult for the community to replace the water system. Likewise, the sustainability concept is foreign to the community and will require awareness-raising and capacity-building for integration in both the project's activities and community's lives.

Resettlement of the Yeh community was a precondition for water delivery imposed by the Canadian engineers. The idea was to protect the catchment area and sustain the water volume. However, this was done with no consideration for the welfare and heritage of the people. The consequences were far-reaching as many lawsuits were filed, and in defiance, some Yeh people relocated to nearby villages and never returned, causing a lot of hardship on this population. Even though this is not a unique situation, some reasonable support would have mitigated the suffering of the people. Picard et al. (2015) provide a success story of the relocation of the people of Mau from the Mount Kenya and Aberdare forests. There was a "provision of livelihood support to the people who have been relocated, livelihood development, public awareness and sensitisation, rehabilitation of degraded areas, strategic management, development of project proposals and convening meetings with development partners to secure financial sustainability" (Picard et al., 2015, p. 130).

The enactment of the 2004 laws on decentralisation without an immediate text of application created room for manipulation of the community by the Kumbo Urban Council. The African Development Bank (2008b) explained that "there is also a danger in decentralizing too quickly, before enabling policies and legislation are in place and before local capacity and competence can be strengthened" (p. 19). The entrenched corruption in the KWA results partly from the decentralisation process that was inadequately implemented.

The stakeholders are involved in lower level staff corruption and grand corruption usually seen in the granting of huge contracts, purchase of equipment and materials (World Bank, 2009). An example is the decision to construct a KWA building at another location. It was alleged that it was a calculated attempt by the board and the management of the KWA to embezzle project funds. Nevertheless, the community claimed that the Paramount Chief's actions to halt the actions were necessary to prevent any further financial misappropriation.

The misrepresentation of the 2004 laws on decentralisation and the politicisation of water issues resulted in a community suspicious of a complete take over of the water scheme by the Kumbo Urban Council. Popic and Patel (2011) opined that decentralisation is an intricate process that, if well-implemented, can produce equity, efficiency, accessibility, and accountability in the delivery of public amenities. Anything to the contrary will cause chaos, inefficiencies, service delivery failures, and accentuated inequity. But, Assetto et al. (2003) anticipated decentralisation of environmental policy would improve local capacity in well-established democracies, even though the same standard cannot be envisaged in all emerging democracies due to limitations of local capacity in terms of inadequate financial, technical resources and deep-rooted political processes. Unfortunately, decentralisation in the Kumbo water case was not well implemented giving rise to social tensions, and power disparity between stakeholders triggered a complex ownership struggle over the water scheme. The intertwined interactions of these stakeholders with undefined roles and responsibilities further complicates the management structure.

The privatisation of the Kumbo water scheme was a useful process to enable the Kumbo

community to own and control their water. Ogendi and Ong'oa (2009) explained that World Bank's support for privatisation was on the premise that it would achieve efficient water supply for the more than one billion people with inadequate water supply, and those with limited sanitation services. While this argument is valid, "it fails to recognize the socio-economic and political status of the majority of the people in these developing countries. The World Bank's argument also fails to learn from its previous efforts in support of water privatization that have performed dismally or failed disastrously" (Ogendi & Ong'oa, 2009, p. 190). Against this backdrop, the decentralisation process and the privatisation policy introduced by the Cameroon government has a direct bearing on the mismanagement of the Kumbo water scheme and the resulting water crisis. This is consistent with Global Water Partnership's (2013) assertion that "the command and control decision-making paradigm and deteriorating drinking water supply services can be triggers for social and political instability, as well as sources of water-related conflict" (p. 1). This case study is an example of the setbacks that resulted from the privatisation policy enacted by the Cameroon government and supported by the World Bank.

Moreover, the frequent use of military force to suppress stakeholders only exacerbated the situation. The militarisation of the city and Kumbo water catchment made the community resolute to control the water scheme, resulting in the community defying the prefectoral order banning public gathering. Despite the ban, the community answered the call of the Paramount Chief and gathered in his palace to get instructions on how to own and control their water. This experience is not unique to Kumbo, as Chukwuma (2016) presented evidence indicating that "traditional rulers are regarded as the number one citizens of their communities, often they are the spokespersons of the community and the ones who understand the intricacies of the local politics" (p. 63).

Furthermore, the delay in investigating corruption allegations created suspicion against the government administration, that it was an accomplice to the corruption in the water scheme. This delay was reflected in participants' claims regarding the hiring of an expensive auditing firm to carry out auditing of the KWA, and the government administration was fully aware that the fee was unaffordable. Also, the creation of a non-functional commission to investigate issues surrounding the water crisis

created further delay. The community was exasperated by this stalemate caused by the stakeholders, and each attempt to take control of the scheme was met with military repression.

What stood out was the explicit difference between the Paramount Chief and the Mayor, who represent the two main stakeholders. The Paramount Chief, the custodian of the people of Kumbo, possesses social capital and political capital, while the Mayor, representing the Kumbo Urban Council, possesses the political capital but is unpopular in the community. However, the interchange between these two stakeholders uncovered the twists and turns of party politics (CPDM vs SDF), traditionalism vs modernism, skilled vs unskilled, literacy vs illiteracy, and powerful vs powerless. Considering that the Paramount Chief has the social capital and political capital, he acts with impunity believing that he is irreproachable. On the other hand, the community believes that the Paramount Chief is infallible, which is the reason why he shut down the KWA's offices at the palace, confiscated all the equipment, asked consumers not to pay their bills, and created a second water structure for the same scheme. The Paramount Chief's meddling in the water issues and advocating for the community to consume water for free is completely in contrast with Ott's (2014) declaration that the Human Right to Water is not about consuming potable water without paying for the services; instead, it has to be user-friendly and users should be ready to pay for it.

The limited power of the water committees was palpable within the Kumbo water scheme. But, Cleaver and Toner (2006) expected complete participation at the local level, or grassroots assemblies called Village Water Committees in the planning, implementation, operation, and maintenance of water supply facilities. This is not the case with the Kumbo water scheme due to the grip of power by the Mayor, who enjoys the support of other Kumbo Urban Council officials and the government administration. Also, the actions of the Paramount Chief were overshadowing the role of the committees. Consequently, the Mayor was accused of being an accomplice to the corruption embedded in the KWA. The administration is also alleged to be benefiting from the chaos because there is so much delay in resolving the water crisis.

The stringent procedures to check corruption instituted by the NSODA were ignored by the Kumbo Urban Council and the KWA with the mindset that the water is a public utility and not a

community property, paving the way to widespread embezzlement and mismanagement within the scheme. Corruption in the Kumbo water scheme is characterised by embezzlement, theft, fraud, extortion, abuse of discretion, favouritism, nepotism, and clientelism. This practice in the KWA corroborates what the World Bank (2009) described as an organisation that allows corrupt practices perpetrated by staff and managers, but also politicians and political parties.

Although the main interest of all the stakeholders is to improve the access to potable water, their commitment to take necessary measures and capabilities differ. Stakeholders are going after money to enrich themselves with little interest in improving the management of the water scheme. The self-centered interaction of the stakeholders, the undefined latitude of duties, and delays due to corrupt practices deter the improvement of the water scheme. Moreover, the community's participation is fragile, especially since it is not recognised as a vital stakeholder.

### 7.2.2. The water crisis

According to the findings, the water crisis started in the 1970s and has existed across four major crises. Besides the Cameroon government's vital role in the implementation and monitoring of the water scheme, its role in the escalation of conflict was evident. The government's authorisation of the SNEC to manage the Kumbo water project raised ownership claims within the Kumbo community, who eventually saw themselves more as consumers than the owners of the water scheme, especially, when the water rate was raised. Joy et al. (2014) observed that "disputes over water distribution, water-derived benefits, and risks often play out along axes of social differentiation like caste, wealth, and gender. Those with least power, rights, and voice suffer lack of access, exclusion, dispossession, and further marginalisation, resulting in livelihood insecurity or increased vulnerability to risks" (p. 1). Thus, the community became protective of the water scheme leading to social tension and the expulsion of the SNEC from Kumbo.

Transferring the management of the water scheme from the SNEC to the Kumbo community was an attempt by the government to pursue the policy of water privatisation. In the mid-2000s, the objectives of the privatisation policy were declared unsuccessful and unachievable. This was even more obvious when private companies were reluctant to invest in the schemes (Byliss & Fine, 2007). This shift of policy

without a corresponding regulatory framework, sufficient financing, time and skilled staff, sensitisation and monitoring, only aggravated problems with operations and maintenance (Naiga et al., 2015). The build-up of these grievances compounded by mismanagement of resources brought about discontent in the community. Also, the transfer of management and supervisory role to the Council triggered widespread criticisms and discontent in the community and a brawl between the Mayor and the Paramount Chief. The expression of the grievances by the community and the escalation of a military presence almost triggered a war with the government forces.

The crisis took on additional political undertones as it quickly transformed into party politics aimed at scoring political points. The shifting of social problems into political issues was an indication that the KWA had been transformed into a political party by the main stakeholders. SDF militants present considered the Paramount Chief's supporters as enemies. Radio communications instructed SDF militants to pay bills at the KWA occupied by the SDF party. SDF militants endorsing the PC were considered enemies of the SDF party. Elections of representatives to the General Assembly have been called cover-ups, where members are selected based on party affiliations.

Earmarking some public standpipes for individuals supporting the SDF party to enrich themselves at the detriment of the community only reiterates the corrupt practices of the staff of a giant scheme designed to improve the health of the population. Furthermore, the SDF staff of the KWA are entitled to free water, but these taps were transformed into a money-making business to the detriment of the water scheme. Smet and van Wijk (2002) observed widespread corrupt traditions in water organisations, which impede the efficiency of water management at all stages. Worldwide, these corrupt practices unequivocally and severely influence the lives of billions of people, and to an unequal degree, the livelihoods of the underprivileged. A specific instance of corrupt practices in the water scheme was the inclusion of the chair and the vice chair of the board of directors on the payroll of the KWA—contrary to the policy that purports that board members receive only sitting allowances. The fact that the council does not invest in the sustainability of the water scheme, yet has allegedly converted the scheme into a source of funding for many Kumbo Urban Council party activities infuriates the community aiming to sustain

the water scheme.

At the forefront of the financial outrage are the 306,000 dollars funded by Canada in 2010 for the rehabilitation of the water scheme. Another financial misappropriation concerning a famous contract between the construction company SOGEA-SATOM and the Kumbo Urban Council for the replacement of broken pipes during road construction. The compensation was alleged to be hundreds of millions of francs, which the Kumbo community was unaware of. However, the Mayor, in a public hearing, declared that the money came in bits but never mentioned how much comprised each bit. This water scheme is supposed to a community-driven development program, for which the World Bank (2016) asserted that it functions on the principles of transparency, participation, local empowerment, demand-responsiveness, greater downward accountability, and improved community capabilities.

The closure of many public taps by the Kumbo Urban Council on grounds that they were adopting the Western model with internal water supply for each household was a hindrance to public health. This action disregarded the principles of a community-driven development program and proved irrational in achieving the public health intentions of the water scheme. Hunter et al. (2010) clarified that in developed countries, potable water is accessible with a huge amount of money invested to ensure consistent domestic deliveries. In developing countries, potable water is usually available through communally managed public standpipes in rural areas and inconsistent water supply systems in towns and cities. The policy from the Council was flawed because the poor who could not afford connection to their homes were obliged to continue fetching unsafe water from valleys closer to them and ignore the much-needed potable water. The attitude of these stakeholders contradicts Carter et al. (1999), who asserted that "the key to sustainability is that all stakeholders involved in consumption/use, maintenance, cost recovery, and continuing support, perceive it in their best interests to deliver high-quality services" (p. 1).

At the peak of the crisis, the Paramount Chief and eight others were indicted and had to appear in Kumbo High Court for charges related to meddling in the water scheme and the facilities of the Kumbo Urban Council. A withdrawal of the charges from court quashed the tension. However, the Senior Divisional Officer called an emergency crisis meeting with the stakeholders and the Bui administration

to examine the crisis. At the end of the meeting, it was resolved that the MOU, which was the source of the crisis, was flawed and needed amendments. It was also resolved that the Paramount Chief convened a meeting with the Mayor to revise the MOU, but the Mayor rejected this offer. Further, attempts by the Senior Divisional Officer and the Governor to call for an independent audit (which was the demand of the Paramount Chief and the Kumbo community) to resolve the crisis ended in a fiasco. The rejection of a dialog by the two major stakeholders created two parallel structures for the water scheme. These actions challenge the principles of community participation in a rural water project, which Chukwuma (2016) believes is necessary for sustainability, efficiency, and affordability of such projects. Therefore, it is the duty of municipal and local government entities to entrust some of their obligations to the communities within their boundaries in a community-managed water supply systems situation. But, it is crucial that this is denoted in a transcribed contractual form, assigning a legitimate status to water committees and delineating the limits of responsibilities of various stakeholders (Smet & van Wijk, 2002).

The findings of the study revealed that as much as the stakeholders' involvement was important during the inception, implementation, and maintenance of the Kumbo water scheme, this process was marred by the following:

- lack of clarity of stakeholder's roles resulting in mistrust,
- lack of political will and leadership by the political party in control of the Kumbo Urban Council,
- lack of funding to sustain the stakeholders' engagement process,
- logistical expenses related to meetings,
- lack of competent and dedicated staff,
- general conflict of interest.

Awareness of these managerial and financial improprieties points to the challenges confronted by the KWA and a serious burden that calls for immediate attention. After many years of dissent, the Paramount Chief and the Mayor undertook the MOU resulting in the shift of management to the Kumbo Urban Council. Consequently, an inclusive and participatory community water governance structure was

founded. However, the embedded corruption and mismanagement produced an agitated community determined to own and control their water scheme. Also, the constant meddling in the affairs of the water scheme by a Paramount Chief with little knowledge in water management aggravated the situation. Therefore, the water crisis is a consequence of the interjection of stakeholders with diverse interests that are threatening the extinction of the precious water the Kumbo people so desired. Although Chukwuma (2016) argued that a sustainable water scheme necessitates inputs from all stakeholders and that the provision of potable water enhances the livelihood of the population, this is absolutely not the case with the Kumbo water scheme as the interests of individual stakeholders take precedence over the interests of the population. For example, the Paramount Chief, in his capacity as the traditional ruler, used his social capital to hijack the situation, creating a second structure for the same water scheme.

As a consequence of these stakeholders' interference and undefined ownership, there were delays in repairs, chaotic water management, a confused population, delinquency in payment of water bills, disruption of businesses, hatred among neighbours, and neglect of the water catchment. With the aforementioned problems, the rehabilitation, and hence sustainability, of the water scheme is far-fetched.

### 7.2.3. Sustainability

This section discusses sustainable aspects of the Kumbo water scheme. This is in response to the secondary question of the study. The study revealed some salient aspects of sustainability of the water scheme and elements threatening the sustainability of the scheme. The literature review of this study established that the sustainability concept surfaced in the 1987 Report of the World Commission on Environment and Development, "Our Common Future", often called the Brundtland Report, which gave it international public importance. It defined "sustainable development as development that meets the needs of the present without compromising the ability of the future generations to meet their own needs" (WCED, 1987, p. 43). The debate of the concept of sustainability emanated from the debate on sustainable development during the early 1970s (Tadesse et al., 2013) and has been a requirement for most development projects.

In order to have a comprehensive understanding of sustainability, it is necessary to outline elements that make a project sustainable. Harvey and Reed (2006) identified eight sustainability elements. These include policy context, institutional arrangements, technology, natural environment, community and social aspects, financing and cost recovery, maintenance, training, and capacity-building. Also, Giné and Pérez-Foguet (2008) added the managerial dimension in the definition of sustainability and stated that institutional, social, technical, environmental, financial, and managerial factors are linked. Mulwa (2004) indicated that a sustainable project should be able to address the following elements: social, economic, environmental, structural, and organizational, as well as technological components.

These various dimensions are an indication that sustainability is a broad concept. For the purpose of this study, the researcher used the Canadian sustainability index for discussion. This is because Canada is the main donor of the water scheme, and sustainability is a requirement for their continued support of the water scheme. At this point, it is important to identify factors of sustainability in the Canadian context and compare it to the sustainable aspects of the Kumbo water scheme. As part of the Canadian environmental policy, community water is expected to be sustainable for future generations. Consequently, the Government of Canada (2007) identified five broad policy categories of sustainable water, including freshwater resources, ecosystem health, water infrastructure, human health and well-being, and community capacity, which will be explained in the table below. We will compare this table to what the Kumbo community has achieved so far to determine if the water scheme is sustainable.

Table 3: Canadian Water Sustainability Index (CWSI)

| | Component | Indicator | Description |
|---|---|---|---|
| Canadian Water Sustainability Index | Resources | Availability | The amount of renewable fresh water that is available per person |
| | | Supply | The level of demand for water use based on water license allocations |
| | | Demand | The amount of water that is removed from the ecosystem |
| | Ecosystem Health | Stress | The amount of water that is removed from the ecosystem |
| | | Quality | The Water Quality Index score for the protection of aquatic life |
| | | Fish | Population trends for economically and culturally significant fish species |
| | Infrastructure | Demand | How long before the capacity of water and wastewater services will be exceeded due to population growth |
| | | Condition | The physical condition of water mains and sewers as reflected by system losses |
| | | Treatment | The level of wastewater treatment |
| | Human Health | Access | The amount of potable water that is accessible per person |
| | | Reliability | The number of service disruption days per person |
| | | Impact | The number of water-borne illness incidences |
| | Capacity | Financial | The financial capacity of the community to manage water resources and respond to local challenges |
| | | Education | The human capacity of the community to manage water resources and address local water issues |
| | | Training | The level of training that water and wastewater operators have received |

Source: CWSI, 2007

**a. Resources**

According to the Canadian sustainability requirement, water resource requirements include availability, supply, and demand. The study participants acknowledged that fresh water is available but limited to supply the Kumbo population. Hunter et al. (2010) corroborated this aspect and stated that "sustainable domestic water supplies depend on the availability of reliable water resources that can be easily developed" (p. 6). However, Molobela and Sinha (2011) argued that climate change is the main glitch influencing water availability and other natural resources. Water rationing in Kumbo is frequent due to shortages during the dry season. These shortages are an upshot of the corrupt practices of the organisation, and the self-interest of the stakeholders confounded by the effects of climate change.

The effects of climate change are not unique to Kumbo. It is a global challenge whose effects were unanticipated. The shortages currently experienced by the Kumbo community are partly a consequence of climate change. Rationing is a strategy employed to ensure that every part of the Kumbo population has the water supply a few days per week. Consequently, the KWA designed approaches to increase the availability of fresh water and combat climate change by carving out the catchment area, resettling people who lived around the catchment area, planting water-friendly trees, and initiating a nursery for water-friendly trees. This is consistent with Olmstead's (2013) assertion: "Climate change may affect both the long-term availability and the short-term variability of water resources in many regions" (p. 1). It is also an indication that the actions taken by the KWA to improve the water supply have not been effective to mitigate the influence of climate change and sustain the water scheme. Sustainability, in this case, is uncertain, and the problems are mostly man-made.

**b. Infrastructure**

The use of affordable infrastructure is one of the factors that favour sustainability. The Kumbo water system has aging infrastructure, and the materials for repairs are no longer available in the market. Securing funds to replace dilapidated infrastructure is challenging for the Kumbo water scheme. Hunter et al. (2010) argued that "the level of water sector financing in low-income countries is widely criticised as being inadequate, but at the same time water supply budgets are often underutilised or ineffectively

used" (p. 7). Also, even though aid from foreign countries is generally limited, certain foreign donors continue this custom to meet up with national commercial concerns. Thus, this has created a situation where new or unsuitable technologies are initiated without plans to ascertain sustainable operation and maintenance (O&M) when the implementation is completed (Harvey & Reed, 2003). This creates a dependency situation in which the KWA is currently afflicted. The study revealed that the Kumbo community is still expecting the Canadian government to come to their aid for the rehabilitation of the water scheme.

The Kumbo water scheme constitutes expired asbestos cement pipes that are considered inapt for the supply of potable water. Consequently, the entire system needs to be replaced with modern PVC pipes, and the entire rehabilitation of the system is estimated at 700 million francs (US$1,238,853.00). It became very expensive and problematic for the Kumbo community to replace the structure and harness new water sources. Wateraid (2009) indicated that "technology choices, management options, and pricing are all questions that affect sustainability in a big way. Technology that is too complex and/or too expensive to run or replace undermines sustainability" (p. 3). Rehabilitation in the Kumbo water case is not only a matter of changing the expired technology or overhauling broken pipes, it is also about improving structural and financial capacity and the use of appropriate and affordable technology.

Due to limited funds, pipes are repaired only on an emergency basis; it has become more expensive to pay for electricity to pump water and more expensive for water to be treated in accordance with public health standards. The above challenges have created fear in the minds of the Kumbo people as they are aware that the expired asbestos pipes could cause cancer. Therefore, extra observation of asbestos in the water is ongoing. The aforementioned problems are indications of a water scheme far from being sustainable.

This was anticipated because the water system was constructed in the 1960s. Moriarty et al. (2013) noted that the recent approaches to sustainable community water started in the 1980s, the international decade for drinking water and sanitation, where the international community pledged to vigorously improve access to rural water and sanitation. It was thanks to this declaration that community management

programs emerged to replace the unsuccessful centralised government system of service delivery, but also as a derivative of the project approach of most NGOs and donors. As a result of this approach, "infrastructure was provided to communities by external agencies, while it was assumed that operation and maintenance (O&M) would be taken up by communities following hand over of the infrastructure at the end of a project" (Moriarty et al., 2013, p. 330). However, in 2003, Schouten and Moriarty explained that donor support is frequently required to improve the essential capacity. Hunter et al. (2010) concluded that the management of water supply technology for community water in poor countries is a myth because it was assumed that users of modern technology would acquire the capability to manage the project themselves after a short period of capacity-building. They added that with the absence of donor support, the proper management of modern technology would be effective only for a short period of time. This is evident in the Kumbo water scheme, as the modern technology with little external support has failed to sustain the Kumbo water scheme. Currently, there is a shortage of water even during the raining season - supposedly, the season that brings plenty of fresh water. Water is wasted through delays in repairing leakages as a result of unavailable material and lack of funds.

**c. Ecosystem health**

Likewise, the ecosystem's health has been seriously affected, evident by the water shortages and rationing the Kumbo community has been experiencing. Major hospitals in the area have been affected by these shortages. Water rates have increased dramatically with inadequate service supply. The supply of potable water is costly as it entails not only the physical labour but the use of heavy equipment that has to be sustained for consistent water supply. Several causes account for the shortages, and these factors are interwoven, interrelated and have been aggravated by the weak technical capacity of the KWA and the Kumbo Urban Council. There are also other relevant causes for water shortages, such as the rapid population growth, population encroaching in the catchment area, and farming, coupled with the harsh effects of climate change. These critical limitations of inadequate fresh water, combined with ineffective sustainability proceedings for water infrastructure, reinforce the challenge the community is confronted with in improving access to potable water and sustaining the scheme.

**d. Human health**

From a public health standpoint, inadequate access to potable water infrastructure is disturbing. Several studies have shown how potable water is vital for human existence (WHO, 2011; WHO/UNICEF, 2013). Other studies have also shown that lack of reliable potable water can influence morbidity and mortality rates, especially in children under the age of five (Gunther & Fink, 2010). The Kumbo community indicated that potable water is accessible to all, exhibited by the installations of public taps in the community and decrease of individuals streaming down the valley for water collection. However, reliability is problematic due to the frequent water cuts, especially, during the dry season. This is consistent with Leed and Schwab's (2005) observation that where there is the availability of potable water, delivery may often be spasmodic. Hunter et al. (2009) also asserted that disruption of water supply can prompt more use of contaminated water sources, which may negate the benefits made from clean water. In spite of the frequent water cuts and reduction of the public water points in Kumbo, a majority of the study participants refuted any outbreak of water-borne diseases since the existence of the water scheme apart from sporadic cases of diarrhea, which might not be linked to the Kumbo water. However, "continuous service from safe, improved water sources is vital to ensuring that households have access to adequate quantities of safe water and is thus essential to maximizing the benefits of safe water for human health and development" (Fisher et al., 2015, p. 1). This is a motivation for the community to ensure sustainability.

**e. Capacity**

Capacity-building is a crucial element of the sustainability framework, but it requires other attributes for constant knowledge and development. Wertz (2011) defines capacity-building as "a coordinated process of deliberate interventions to upgrade skills, improve procedures and strengthen organisations" (p. 21). Levy and Sidel (2011) also asserted that training, community organization, construction quality, and technology are favourable to sustainability because household members and water committees' members, through training, can improve their skills and, consequently, the project's sustainability. It was on this premise that the human capacity to manage the Kumbo water resources and

address local water issues was done with the training of two water technicians in Canada. The expectation was for the training to be transferred to other locals to assist with the maintenance and sustainability of the water scheme. Furthermore, the community was trained on sustainable farming systems, deforestation and on planting water-friendly trees at the catchment and tree nurseries. These reported results resonate with those of Ondieki (2016) who asserted that "capacity building consists of developing knowledge, skills and operational capacity so that individuals and community groups may achieve their purposes" (p. 1).

The financial capability of the Kumbo community to secure the water scheme from its inception was a challenge. This was because Dr. Fonlon sorted funding for materials and equipment from Canada. Even though local contributions subsidised the initiation of the water scheme, without Canadian aid it would still be struggling. Despite the evidence of limited funds, the corrupt practices of the organisation are worsening the situation. It has also been challenging for the Kumbo community to get financial proceedings audited owing to corrupt officials managing the project. Camdessus (2003) revealed that this situation is common in many water schemes, as he found out that many water issues are due to weak management organisations, commonly indicating the broader political, administrative, and financial difficulties of the communities in which they function. Consequently, conflicts among stakeholders embedded in the structure and ongoing court cases continuously render the water scheme unsustainable.

Conscious of the health effects of the expired asbestos pipes, the community is desperate for the rehabilitation of the water system. Despite reports that the rehabilitation plan had been funded by the Canadians in the second phase, it is still a challenge to secure the amount required for rehabilitation. An amount that is estimated at 700 million francs CFA. Also, the sumptuous salaries of the board members and the manager of the KWA just make it harder to secure funds for the project. The meddling of the Paramount Chief in the water issues and the unskilled workers within his structure made it worse. The effects of financial inefficiency and corrupt practices, delays in tackling leakages, decrease in water volume, and the subsequent water rationing call for elites and Canadians of goodwill to offer support for maintenance against water crises, and against conflicts among neighbours in the community and

sociopolitical unrest. At the end of the chain of issues is a community desperate for a sustained water scheme.

**f. Community management**

Community management is another concept used as evidence of sustainability for water schemes. Moriarty et al. (2013) outlined the principles of community management, including community participation in the development of the water system, community ownership of the system, and readiness and aptitude of the community to ensure operation and maintenance.

Relating the aforementioned principles in this case study, the study participants recalled the involvement of the Kumbo community in the inception and implementation phases, affirming Imoro and Fielmua's (2011) assertion that community participation is an important approach for the effective and sustainable process of a community water scheme, and no community water scheme can be exceptionally efficacious without the support of the benefiting community. The community contributed physical labour, material, and financial support; consistent with Lockwood's (2004) perspective that inclusive participation of the community, in terms of operation and maintenance (O&M) of the scheme, technical and financial management, cost sharing for execution and O&M, strategic decision-making and ownership, is a critical feature for sustainability of water supply schemes.

However, participation was limited as the community was not involved in the selection of the type of technology employed, regarding the asbestos pipes that are expired, and the community found it cumbersome to substitute them with cheaper and more readily available types of pipes. A majority of the community members feel disfranchised and have little knowledge of how the water scheme is managed. Harvey and Reed (2007) noted that "despite its widespread popularity among donors and implementing agencies, low water supply sustainability levels throughout the sub-continent indicate that it is not the panacea it is often presented to be" (p. 1). Rural Water Supply Network (2010) has described these suppositions as myths, and Harvey and Reed (2007) clarified that they are based on the cultural idealisation of rural communities.

But then again, the FAO (2007) policy necessitates the dynamic involvement of the community in development activities for a community water project by empowering them to organise their own innovative capacities, manage resources, participate in decision-making, and influence the water supply activities. Harvey and Reed (2007) uphold that "if community management systems are to be sustainable, they require ongoing support from an overseeing institution to provide encouragement and motivation, monitoring, participatory planning, capacity building, and specialist technical assistance" (p. 1). This is not the case with the Kumbo water scheme, as the overseeing institution (in this case, the Kumbo Urban Council) provides lip service to the community.

A key aspect of sustainability is community ownership and management. The Kumbo water supply system has subsisted through many contested ownership claims. The intricacy of ownership of the Kumbo water scheme emanates from its origin and evolution. Although "community management is based on the well-intentioned principle of encouraging ownership and empowering communities, it also acts as a convenient concept for shifting responsibility for ongoing operation and maintenance (O&M), and hence sustainability, of services from facility-provider to end-user" (Harvey & Reed, 2003, p. 116). The history of the project is often evoked by the Kumbo community to justify their ownership claim. Toyobo and Tanimowo (2011) suggested that "successful community management requires that clear ownership of the water systems be defined" (p. 1). The absence of ownership clarification is the root cause of the water crisis threatening the sustainability of the water scheme.

Using these factors to assess the sustainability of the Kumbo water scheme remains an elusive goal. Six major issues threatening the sustainability of the water project stood out from the analysis, including endemic corruption, climate change, the controversial ownership claims, the expired technology, the water crisis, and the undefined responsibilities of stakeholders. Likewise, there were many foreign ideas injected into the project without sufficient education to the community for understanding. For example, the concepts of sustainability and gender equality are foreign concepts. Foreign money, foreign engineers, and foreign technology were also introduced in the water project. These ideas confirm Levy and Sidel's (2011) assertion that the realisation of water schemes in Africa have mostly been

dependent on external donors. Consequently, decisions concerning the type of water delivery system implemented have basically been donor driven.

However, adapting these foreign aspects to local realities is achievable. But, a water scheme implemented in the 1960s with no notion of sustainability leaves much to be desired.

### 7.2.4. Social and economic effect

This section is in response to the main research question about the social and economic influence of the Kumbo water project on the health of the Kumbo community. The findings from this study indicated that there were substantial and apparently beneficial changes as a direct consequence of the water supply interventions. UN Water (2015) recognised that "a focused water goal would create social, economic, financial and other benefits that greatly outweigh its costs" (p. 5). The importance of safe drinking water on human health, well-being, and socio-economic development is well established.

Furthermore, Cook et al. (2015) described an improved water supply as a system that supplies water consistently, of drinkable quality, and in a large enough quantity to satisfy household necessities like drinking, bathing, cooking, and washing the house. Many studies have indicated that access to improved water supply saved time and increased livelihood opportunities for the poor individual/household. Previous studies have suggested that "socioeconomic development, in particular protection and improvement of public health, is linked to safe drinking water" (Jagals, 2012, p. 1). Hunter et al. (2010) noted that "inadequacies in water supply affect health adversely both directly and indirectly" (p. 1). This study revealed a livelihood boost in the social and economic conditions of the Kumbo population. Health effects were palpable as there were no water-borne disease outbreaks after the initiation of the Kumbo water supply scheme. Injuries sustained during the struggle for collecting water were averted, psychological satisfaction was reported, and general hygiene both at home and in school improved. However, the expired asbestos pipes were a health concern for the people of Kumbo. It is plausible that water supply interventions will have more comprehensive and beneficial effects.

Time spent and physical labour performed for fetching water were reduced. Although many studies have indicated that saving time enabled women to invest the time for income-generating activities,

there was no evidence in this case if the time saved improved income-generating activities. This finding is corroborated by the OECD (2012) when they noted that very little is accomplished in terms of increased income with regards to the time saved and decreased workload. In other words, saving time does not translate to increased income.

The Kumbo water scheme helped save time for school children, which improved school attendance and performance. Hygiene and sanitation also improved. After obtaining closer access to quality water, participants experienced improved economic situations. Also, gender relations improved. Water scarcity affected women and children more than men before the initiation of the water scheme. Women and children spent most of the day queuing up in the valley waiting for their turn to fetch water. The supply of Kumbo water to the population relieved the women and children from this burden and diverted their interest to children's education and other desired needs. Within the community, attitudes towards women changed as they were elected to join the water committees. Additionally, some cultural stereotypes regarding women's employment shifted from them being only secretaries and clerks to water technicians. These advances all represent the positive influence of the water project on the population.

The findings indicate that the realisation of the Kumbo water scheme was a good decision not only for social, health, and environmental influence, but also for economic reasons to enable the poor to generate income and improve their livelihoods. Consequently, small businesses, such as restaurants, hotels, washing points, vegetable gardens, all flourished.

These benefits did not seem to translate into long-term beneficial outcomes for the community, and the water scheme in particular, because of the sociopolitical situation caused by the water crisis. It is obvious that the negative influence outweighed the positive influence.

No resources were accessible to focus on gender issues, and no gender-trained staff was in charge of gender-related issues. It is necessary for the management of the KWA water project to seriously consider the involvement of more women in all positions of the project.

The sociopolitical tension among stakeholders split the community; social cohesion was lost. Social problems were transformed into political issues, and disputing parties and their surrogates scored political points at the expense of the population. Media houses were used to either inform or misinform the population. Those who demonstrated support for the Paramount Chief were treated with scorn by the opposing party. Consequently, businesses were closed, court cases were rampant, neighbours stopped greeting each other, renting a place from the Council for business became nearly impossible, and licences issued for house construction were withdrawn. It is clear how the water crisis is interwoven in all the chapters, which is an indication that the persistence of the water crisis could render the Kumbo water project unsustainable. The community will have to spend time and energy solving problems more than enjoying the benefits of the water scheme.

### 7.3. Limitations

The researcher faced various drawbacks while conducting the study. Recruiting participants was a process. Much time was needed to make calls, make schedules, and wait for participants to give permission for an interview. A lot of patience had to be exercised when making many calls a day to make sure there was at least one person a day to interview.

Due to the sensitivity of discussing issues relating to the Kumbo water scheme, and the court cases that were ongoing, the researcher encountered reluctance from the KWA and the Kumbo Urban Council staff at the management level to provide vital information concerning the project. Considering the fact that the KWA project has experienced a series of conflicts for many decades and the current conflicts among stakeholders, it was a very sensitive topic.

It was challenging discussing the KWA and the Kumbo Urban Council's involvement during the focus group discussions. To overcome this hurdle, the researcher emphasised to participants the importance of the confidentiality agreement that was signed before the discussion. It was also difficult for groups to volunteer to participate in the study. Only two groups with an average of five participants participated from five groups previewed. Also obtaining appointments from the selected respondents proved problematic because of conflicting schedules. To overcome this problem, the researcher booked

appointments early enough and made follow-up calls. The limitations of the study and future directions will be elaborated at the end of the thesis.

Information obtained from the focus group discussions was very scanty as participants were suspicious of others despite all efforts assuring them that information provided would remain confidential. The sensitivity of the topic was so intense that one elite had to tape the information he was contributing to ensure that he would not be misquoted. Some participants on several occasions failed to respect the initial interview schedule because of disregard for the research, fear of being victimised; some changed their minds and gave flimsy excuses for refusing to be interviewed. In most cases, the interviewees were replaced, and for the groups, the researcher motivated them with drinks and made the environment less formal. Some of the project staff provided very scanty information, while key informants who had no direct influence or who had nothing to lose provided detailed information. It was difficult to get some participants talking, some were hesitant to answer while others were very fast and knowledgeable about the project. In all cases, the researcher had to develop a relationship with them, making the interview less formal and keeping the discussion going using great facilitation skills.

Transcription was not an easy task as some participants provided a significant amount of irrelevant data resulting from the lengthy discussions. Therefore, it was time-consuming to distinguish relevant data from irrelevant data as new themes emerged. Analysing the data consumed more time than expected as drawing conclusion from the data provided became cumbersome, while focusing on choosing quotes that were relevant and interesting. Consequently, the researcher constantly returned to the data, clustered the information, sub-categorised them, and classified concepts or theories that were related to the literature review and research questions.

### 7.4. Suggestions for future research

The results of this case study created additional input for the field of water supply intervention and health. It adds to previous research by using the qualitative approach to examine the perspective of the Kumbo community in relation to the water scheme. The study revealed some social and economic benefits of the water scheme, some strides in stakeholder involvement in the project, and the sustainability

of the water scheme. Based on the results of the study, the researcher realised that the need to dynamically involve all stakeholders cannot be underestimated. The researcher also noted that the Kumbo water scheme risks extinction. Further research on an intersectoral collaboration could enable a sustained Kumbo water project. A comparative study of the funded Kumbo water scheme and self-sustaining water projects, void of conflicts, is necessary. This study may generate knowledge and share experiences on the best practice of sustainable community-based water.

### 7.5. Conclusion and Recommendations

The unique contribution of potable water to the livelihood of the Kumbo community cannot be underestimated. The realisation of the Kumbo water scheme is a direct result of the stakeholders' immediate involvement in the conception, initiation, implementation, and monitoring of the project. However, the conflict among stakeholders in the water scheme is the architect of the dysfunction experienced by the Kumbo water supply system. This finding is corroborated by Otto (2014) that "both corruption and clientelism are the main causes of the technical and man-made inducted problems in the access to drinking water in Cameroon, which are underlaid by problems among and within actors. Furthermore, they constitute the controlling parameters of power within the different actors" (p. 88). To rehabilitate the Kumbo water system, the unique contribution of all the stakeholders is required.

Therefore, trust among stakeholders must be established by distributing information about the project's activities, defining the responsibilities of various stakeholders within the structure, and providing them with adequate support. Destruction of the community's trust with conflicts over misappropriation of project funds, insufficient water supply, inadequate participation from women, and their absence in leadership positions only erode the expected influence of the water supply.

The study findings also indicated that the water crisis in the Kumbo community is not caused by the physical shortage of water. It is a man-made problem leading to demand surpassing supply and the consequent inefficient management of the water structure. It is caused by multifaceted and intertwined influences dominating stakeholders of the water scheme. Otto (2014) perceived the water crisis resulted from the strong presence of dishonesty rooted in the historical, political, and economic foundations,

including the traditional approach to life, family, and educational background, and the destruction of aspects of accountability influenced by the water project. The challenges in this case study emanate mainly from corruption and have degenerated into a broad management problem and hindrance of the water scheme. Overcoming these challenges calls for the need to promote local ownership and sustainability. However, resolution of the water crisis could improve relationships between stakeholders. Therefore, "a water strategy for peace can create common local objectives and institutionalized cooperation at a wider range of issues" (Tsillas, 2015, p. 13).

Hence, the Kumbo community should be empowered to take control of the development within their own community, identify main concerns, and develop their own solutions to their needs. The water committees should be empowered to develop the essential capacities to make plans that contribute to project maintenance and rehabilitation of the scheme.

Although there are some glimpses of progress, the sustainability concept is challenging to implement in the Kumbo water scheme. Given that it is a new concept to the community, a lot of support is needed to put the project on track to supply accessible and reliable potable water. Most importantly, Dean et al. (2016) indicated that "sustainable approaches to water management require broad community acceptance of changes in policy, practice, and technology, which in turn, requires an engaged community" (p. 1). Unsustainable water supply will result in limited access to clean water and its consequence on the health of the population. Hunter et al. (2010) pointed out that "access to a safe and continuous supply of water for drinking, cooking, and personal hygiene is an essential prerequisite for health. An inadequate water supply - whether as a result of poor access or quality, low reliability, high cost, or difficulty of management is associated with significant health risks" (p. 8). Therefore, measures are necessary to foster sustainability of the water scheme, including regular sensitisation and mobilisation of financial contributions by the community and active participation in project management, capacity-building, and technical training on the operation and maintenance of the water scheme facilities (Tsillas, 2015). Failure to do that, Tsillas (2015) predicted that the water problems will be aggravated by climate change, which

will result in inadequate water for the population and the environment, and it will be more problematic to satisfy both the population and the environment.

The Kumbo water scheme produced intended and unintended social and economic consequences. In 2014, John Hopkins Water argued that the proximity of potable water mitigates the negative impacts of health globally. John Hopkins Water (2014) also noted that in addition to health effects, other consequences may occur. Thus, this case study confirms the assertion that the intervention of water supply for the community, under the auspices of public health intervention, tackles several problems concurrently. Furthermore, although there are "the direct health benefits of improved safe water supplies, there are also many indirect benefits. For example, the strong relationship between water and livelihoods in all regions and economies of the world affects health indirectly" (Hunter et al., 2010, p. 3). Even though the Kumbo community experienced improved health and other social and economic benefits, there were other negative effects resulting from the water conflicts. These conflicts overshadow gains made from the water scheme. Hence, Levy and Sidel (2010) proposed the following: (1) raising awareness about the importance of access to fresh water, (2) documenting conflicts over water and their adverse health effects, (3) promoting efforts to prevent contamination of water, to conserve it, and to use it more efficiently, (4) promoting nonviolent approaches to resolving conflicts over water, (5) promoting proactive cooperation among countries or groups within countries. It is clear from this case study that reliable potable water improves health and indirectly provides other social and economic benefits.

Therefore, there should be an intersectoral collaboration among stakeholders to improve the socio-economic influence of the water scheme for the community. This process should ensure the local community's access and potential to manage and take decisions on problems influencing the project on a broader platform (Mudavanhu, 2015). By so doing, much of the crisis currently ravaging the water scheme will be resolved, and end the decades of the sociopolitical tension in the Kumbo community.

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# Appendices

## Appendix A: Interview guide for Community Leaders

This research is focused on the Kumbo Water project of the North West province in Cameroon and intends to examine the influence of the Kumbo water on the livelihood of the Kumbo community. The interview will take approximately one hour. Participation is voluntary and anonymity of participants will be respected.

1. Please indicate your
    - Name
    - Age range
    - Sex
    - Occupation
    - Level of education
2. Tell me about this project?
3. How have you as individuals been directly affected (positively or negatively) by this project?
4. What was your level of involvement in the designing and implementation of the project?
5. How has this project addressed the "tangible" needs of this community?
6. How do the community and government perceive this project?
7. What are some of the challenges that were related to this project during implementation?
8. Tell me about the continuity of this project.
9. What factors in your opinion will sustain the project and what factors will hinder the sustainability of the project?
10. What is the likelihood that you will continue to benefit from the project?
11. What are your suggestions that can enable the sustainability of the projects?
12. What has been women's role in this project?
13. How have women benefited from the project?
14. Have women and girls benefited from increased water access and from increased decision-making in water committees?
15. Has this strengthened women's empowerment and advanced gender equity?
16. Do you have any other comment in relation to the discussion we just had?

## Appendix B: Interview guide for Households

This research is focused on the Kumbo Water project of the North West province in Cameroon and intends to examine the influence of the Kumbo water on the livelihood of the Kumbo community. The interview will take approximately one hour. Participation is voluntary and anonymity of participants will be respected.

1. Tell me about the Kumbo water project?
    - Name
    - Age range
    - Sex
    - Occupation
    - Level of education
2. How did the project start?
3. How was the project funded? How has it been after the funding came to an end?
4. How has the project contributed to social and economic welfare in your household?
5. What has been the negative impact of the project on your household?
6. What is your perception of the project in your village?
7. How does government, in your opinion perceive this project?
8. How would you describe your level of ownership of the project?
9. Do you think you participated enough? What is your level of participation?
10. What is your opinion regarding current/future funding of this project in this community?
11. What are some of the constraints that you know affected the implementation of the project and how did that affect you as an individual?
12. What would you recommend in order to improve the performance of how projects are designed and implemented to benefit your household?
13. Have women and girls benefited from increased water access and from increased decision-making in water committees?
14. Has this strengthened women's empowerment and advanced gender equity?
17. Do you have any other comment in relation to the discussion we just had?
18. Is there anything more that you would like to add to this conversation?

## Appendix C: Interview guide for the Focus group

This research is focused on the Kumbo Water project of the North West province in Cameroon and intends to examine the influence of the Kumbo water on the livelihood of the Kumbo community. The interview will take approximately one hour. Participation is voluntary and anonymity of participants will be respected.

1. Name of your Group
    - Name
    - Age range
    - Sex
    - Occupation
    - Level of education
2. When did your group start?
3. In what capacity is your group related to this project?
4. Who started it?
5. What is the motivation for initiating this group?
6. What activities do you do?
7. Whose ideas are the activities that you carry out?
8. How have these activities influenced the social and economic condition of the community or your members?
9. What are the factors responsible for the success or failure of your work?
10. What have been the negative effects of these activities on to your members and the communities?
11. What will happen to your activities and the impact of your work if the project stops functioning? What are some of the constraints that you face in relation to the project?
12. How can these constraints be solved so that the project can benefit the community better?
13. Have women and girls benefited from increased water access and from increased decision-making in water committees?
14. Has this strengthened women's empowerment and advanced gender equity?
15. Do you have any other comment in relation to the discussion we just had?
16. Is there anything more that you would like to add to this conversation?

## Appendix D: Key Informants Interview guide

This research is focused on the Kumbo Water project of the North West province in Cameroon and intends to examine the influence of the Kumbo water on the livelihood of the Kumbo community. The interview will take approximately one hour. Participation is voluntary and anonymity of participants will be respected.

1. Tell me about the Kumbo water project
    - Name
    - Age range
    - Sex
    - Occupation
    - Level of education
2. In what capacity are you involved in the project?
3. What activities do you carry out?
4. Who are the main stakeholders?
5. What is the role of the various stakeholders?
6. How helpful are the stakeholders to the progress of the project?
7. What support have you given to the KWA project?
8. What are the social and economic consequences of these projects to your livelihood?
9. What is the perception of the community of the government's role to the project?
10. How do you perceive the ownership claims of this?
11. Are you satisfied with the management of the Project?
12. Is the project sustainable?
13. What has your organisation done to enable the project to attain sustainability?
14. What are the constraints?
15. What strategies do you have to address these constraints/ challenges?
16. What other comments do you have about the sustainability of this project?
17. Have women and girls benefited from increased water access and from increased decision-making in water committees?
18. Has this strengthened women's empowerment and advanced gender equity?
19. Is there anything more that you would like to add to this conversation?

## Appendix E: KWA- Staff Interview guide

This research is focused on the Kumbo Water project of the North West province in Cameroon and intends to examine the influence of the Kumbo water on the livelihood of the Kumbo community. The interview will take approximately one hour. Participation is voluntary and anonymity of participants will be respected.

1. Tell me about the KWA
    - Name
    - Age range
    - Sex
    - Occupation
    - Level of education
2. How are you involved in the project?
3. When did the projects start?
4. What is the source of financing for this project?
5. How much of the project finances is your own local contribution?
6. Who are the main stakeholders?
7. What is their role?
8. How helpful are the stakeholders to this project?
9. In your opinion, what has been the social and economic impact of these projects since it was initiated?
10. What are the factors leading to successes or failures of the project?
11. How sustainable is the project?
12. What are the strategies put in place to ensure project sustainability?
13. What are the challenges that you have encountered in ensuring project sustainability?
14. What are your strategies to address the challenges you have highlighted to attain project sustainability?
15. Have women and girls benefited from increased water access and involved in water committees?
16. In your opinion, has it empowered women?
17. Is there anything more that you would like to add to this conversation? Do you have any other comment/thoughts that you would like to share?

## Appendix F: Recruitment text

I am Patience Lum Ambe, a PhD student in the Population Health program, University of Ottawa, Canada. I am doing research and in the process of collecting data for my doctoral thesis. I wish to have an in-depth interview with you. My research is on exploring the influence of the Kumbo water project on the livelihood of the Kumbo community. This research is an independent study from the University of Ottawa and might benefit you by broadening your knowledge on the influence of the project on your livelihood. It will provide suggestions that will enable the community improve your water supply and ensure sustainability.

What I will expect from participant is to volunteer to participate in the interview. Question will be asked which will require you to provide in-depth information about the project and how it has affected you as individual or the community. You will sign a consent form that will commit all parties involved in the interview or discussions to protect and keep all information shared confidential.

The interview will take about 60 minutes. After the interview, we will meet again to review the transcript. This will also be voluntary.

If you are interested, please feel free to contact me using the contact information below

## Appendix G: Participation Consent Form

I have read the accompanying letter of information titled Study Information Sheet. The study has been explained to me and I agree to participate in the study described. The researcher has addressed all my questions and concerns.

I understand that Mrs. Patience Ambe, a PhD student at the University of Ottawa, will be the interviewer and that this study is her thesis requirement for her degree. I understand that any information I provide for the study is strictly confidential and that I will only be identified by a unique code that will only be accessible to the researcher, the research coordinator and the thesis supervisor. Quotations for the final report will not be included if the context could lead to the identification of an individual. All written information from this study will be stored in a locked cabinet at the University of Ottawa. Data gathered as a part of this study will be destroyed after 5 years. I understand that complete anonymity about participating in this study cannot be guaranteed, especially if interviews take place in a public place, where others in the location may be aware of my participation in the study. I understand that my participation in this study is voluntary and that I have the right to withdraw at any time.

DATE: ____/____/____ (to be dated by participant)
SIGNATURE OF Participant: _____
PRINTED NAME OF Participant: _____
DATE: ____/____/____ (to be dated by researcher)
SIGNATURE OF Researcher: _____


## Appendix H: Consent Form - Community Leaders

**Title of the study: Exploring the influence of a community-based health project on the livelihood of the rural poor in Cameroon: The case of the Kumbo water project**

**Name of researcher**: Patience Lum Ambe
Population Health PhD Program, Faculty of Graduate and Postdoctoral Studies, University of Ottawa

**Supervisor**: Professor Sanni Yaya
120 University, Social Science building, Rm. 8006
University of Ottawa, Ontario, Canada, K1N 6N5



**Invitation to Participate:** I am invited to participate in the above mentioned research. The study is a doctoral thesis conducted by Patience Lum Ambe and supervisor Professor Sanni Yaya, from the University of Ottawa.

**Purpose of the Study:** To examine the influence of the Kumbo water project as it pertains to social and economic welfare of community members.

**Participation:** My participation consists of essentially making myself available for an interview with the Researcher and the validation of the transcription afterward. I am meeting with the Researcher, Patience Lum Ambe, for about 60-90 minutes for an interview within reasonable time after the signature of this consent form. The interview are questions about my knowledge of the project, participation in the project, success and failures of the project, the social and economic impact of the project, sustainability of the project and challenges. The interview is a face to face interview and may be held after normal business hours depending on my schedule and that of the interviewer. The interview session is scheduled at a designated location within the community. I am aware that the information collected will be used as data and analyzed for the study, and may be included in final publications of the report. I am also aware that this study is an independent study from the University of Ottawa.

**Risks:** There will be some social repercussions. I might provide information that other community members might not be happy with if known to them. I have received assurance from the Researcher that every effort will be made to minimise this risk by ensuring that the information I provide remain confidential and will be destroyed after seven years.

**Benefits:** I will not be reimbursed for my participation in this study. My participation in the research may assist in broadening my knowledge about the influence of the project on my livelihood and therefore estimate the project needs when expanding such interventions. it will provide practical guide that will help the community improve their water project and ensure sustainability.

**Confidentiality and anonymity:** I have received assurance from the researcher that she will do her best to keep the information I will share confidential. I understand that the contents will be used only for research purposes and

that my confidentiality will be protected. **Anonymity** will be protected by having my name and identification left out of the research, analysis and any possible publications. Pseudo names will be used to protect anonymity.

**Conservation of data:** The data collected on the audio recordings, transcripts and hand-written notes will be kept in a secure manner locked and stored by my supervisor in the International Development and Global Studies Office at the University of Ottawa. The data will only be accessible to the researcher and supervisors of the study and will be stored for seven years. After this period, it will be destroyed.

**Voluntary Participation**: I am under no obligation to participate and if I choose to participate, I can withdraw from the study at any time and/or refuse to answer any questions, without suffering any negative consequences. If I choose to withdraw, all data gathered until the time of withdrawal will be included in the study unless I advise that my information should not be used. The interview will be audio recorded with my concern.

**Acceptance:** I, *(Name of participant)* _____, agree to participate in the above research study conducted by Patience Lum Ambe of the Population Health PhD Program, Faculty of Graduate and Postdoctoral Studies, University of Ottawa, under the supervision of Professor Sanni Yaya.

**Transcripts**: Would you like to review transcripts of your interview? **YES** **NO**

If I have any questions about the study, I may contact the researcher or supervisors.

If I have any questions regarding the ethical conduct of this study, I may contact:

The Protocol Officer for Ethics in Research, University of Ottawa, Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON K1N 6N5

Email: ethics@uottawa.ca

The Chairperson of the Research Ethics Committee at the Catholic University
Big Mankon, Bamenda, Cameroon
P.O. Box 782 Mankon

Email: info@catuc.org

-

There are two copies of the consent form, one of which is mine to keep.

Participant's signature: Date:

Researcher's signature: Date:


## Appendix I: Consent Form Focus Group

**Title of the study: Exploring the influence of a community-based health project on the livelihood of the rural poor in Cameroon: The case of the Kumbo water project**

**Name of researcher**: Patience Lum Ambe
Population Health PhD Program, Faculty of Graduate and Postdoctoral Studies, University of Ottawa

**Supervisor**: Professor Sanni Yaya
120 University, Social Science building, Rm. 8006
University of Ottawa, Ontario, Canada, K1N 6N5

Université d'Ottawa
Faculté des études supérieures et postdoctorales

Programme de doctorat en santé des populations

University of Ottawa
Faculty of Graduate and Postdoctoral Studies

PhD in Population Health Program

**Invitation to Participate:** I am invited to participate in the above-mentioned research. The study is a doctoral thesis conducted by Patience Lum Ambe and supervisor Professor Sanni Yaya, from the University of Ottawa.

**Purpose of the Study:** To examine the influence of the Kumbo water project as it pertains to social and economic welfare of community members.

**Participation:** My participation consists of essentially making myself available for an interview with the Researcher and the validation of the transcription afterward. I am meeting with the Researcher, Patience Lum Ambe, for about 60-90 minutes for an interview within reasonable time after the signature of this consent form. The interview are questions about my knowledge of the project, participation in the project, success and failures of the project, the social and economic impact of the project, sustainability of the project and challenges. I understand that this is a group discussion and the session is scheduled at a designated location within the community. I am aware that the information collected will be used as data and analyzed for the study, and may be included in final publications of the report. I am also aware that this study is an independent study from the University of Ottawa.

**Risks:** There will be some social repercussions because information provided during discussion will be known by other participants. Participants are reminded to keep information shared in the group confidential. The Researcher has promised to make every effort to ensure that information provide in the group remains confidential and will be destroyed after seven years.

**Benefits:** I will not be reimbursed for my participation in this study. My participation in the research may assist in broadening my knowledge about the influence of the project on my livelihood and therefore estimate the project needs when expanding such interventions. it will provide practical guide that will help the community improve their water project and ensure sustainability.

**Confidentiality and anonymity:** I have received assurance from the researcher that she will do her best to keep the information I will share confidential. I understand that the contents will be used only for research purposes and that my confidentiality will be protected. **Anonymity** will be protected by having my name and identification left out of the research, analysis and any possible publications. Pseudo names will be used to protect anonymity.

**Conservation of data:** The data collected on the audio recordings, transcripts and hand-written notes will be kept in a secure manner locked and stored by my supervisor in the International Development and Global Studies Office at the University of Ottawa. The data will only be accessible to the researcher and supervisors of the study and will be stored for seven years. After this period, it will be destroyed.

**Voluntary Participation**: I am under no obligation to participate and if I choose to participate, I can withdraw from the study at any time and/or refuse to answer any questions, without suffering any negative consequences. If I choose to withdraw, all data gathered until the time of withdrawal will be included in the study unless I advise that my information should not be used. The interview will be audio recorded with my concern.

**Acceptance:** I, *(Name of participant)* _____, agree to participate in the above research study conducted by Patience Lum Ambe of the Population Health PhD Program, Faculty of Graduate and Postdoctoral Studies, University of Ottawa, under the supervision of Professor Sanni Yaya and Professor

**Transcripts**: Would you like to review transcripts of your interview? **YES** **NO**

If I have any questions about the study, I may contact the researcher or supervisors.

If I have any questions regarding the ethical conduct of this study, I may contact:

- The Protocol Officer for Ethics in Research, University of Ottawa, Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON K1N 6N5
  Email: ethics@uottawa.ca

The Chairperson of the Research Ethics Committee at the Catholic University
Big Mankon, Bamenda, Cameroon.
P.O. Box 782 Mankon
Email: info@catuc.org

There are two copies of the consent form, one of which is mine to keep.

Participant's signature: Date:

Researcher's signature: Date:

## Appendix J: Consent Form - Household

**Title of the study: Exploring the influence of a community-based health project on the livelihood of the rural poor in Cameroon: The case of the Kumbo water project**

**Name of researcher**: Patience Lum Ambe
Population Health PhD Program, Faculty of Graduate and Postdoctoral Studies, University of Ottawa

Université d'Ottawa
Faculté des études supérieures et postdoctorales

**Supervisor**: Professor Sanni Yaya
120 University, Social Science building, Rm. 8006
University of Ottawa, Ontario, Canada, K1N 6N5

Programme de doctorat en santé des populations

University of Ottawa
Faculty of Graduate and Postdoctoral Studies

PhD in Population Health Program

**Invitation to Participate:** I am invited to participate in the above mentioned research. The study is a doctoral thesis conducted by Patience Lum Ambe and supervisor Professor Sanni Yaya, from the University of Ottawa.

**Purpose of the Study:** To examine the influence of the Kumbo water project as it pertains to social and economic welfare of community members.

**Participation:** My participation consists of essentially making myself available for an interview with the Researcher and the validation of the transcription afterward. I am meeting with the Researcher, Patience Lum Ambe, for about 60-90 minutes for an interview within reasonable time after the signature of this consent form. The interview are questions about my knowledge of the project, participation in the project, success and failures of the project, the social and economic impact of the project, sustainability of the project and challenges. The interview is a face to face interview and may be held after normal business hours depending on my schedule and that of the interviewer. The interview session is scheduled at a designated location within the community. I am aware that the information collected will be used as data and analyzed for the study, and may be included in final publications of the report. I am also aware that this study is an independent study from the University of Ottawa.

**Risks:** There will be some social repercussions. I might provide information that other community members might not be happy with if known to them. I have received assurance from the Researcher that every effort will be made to minimise this risk by ensuring that the information I provide remain confidential and will be destroyed after seven years.

**Benefits:** I will not be reimbursed for my participation in this study. My participation in the research may assist in broadening my knowledge about the influence of the project on my livelihood and therefore estimate the project needs when expanding such interventions. it will provide practical guide that will help the community improve their water project and ensure sustainability.

**Confidentiality and anonymity:** I have received assurance from the researcher that she will do her best to keep the information I will share confidential. I understand that the contents will be used only for research purposes and that my confidentiality will be protected. **Anonymity** will be protected by having my name and identification left out of the research, analysis and any possible publications. Pseudo names will be used to protect anonymity.

**Conservation of data:** The data collected on the audio recordings, transcripts and hand-written notes will be kept in a secure manner locked and stored by my supervisor in the International Development and Global Studies Office at the University of Ottawa. The data will only be accessible to the researcher and supervisors of the study and will be stored for seven years. After this period, it will be destroyed.

**Voluntary Participation**: I am under no obligation to participate and if I choose to participate, I can withdraw from the study at any time and/or refuse to answer any questions, without suffering any negative consequences. If I choose to withdraw, all data gathered until the time of withdrawal will be included in the study unless I advise that my information should not be used. The interview will be audio recorded with my concern.

**Acceptance:** I, *(Name of participant)* _____, agree to participate in the above research study conducted by Patience Lum Ambe of the Population Health PhD Program, Faculty of Graduate and Postdoctoral Studies, University of Ottawa, under the supervision of Professor Sanni Yaya.

**Transcripts**: Would you like to review transcripts of your interview? **YES** **NO**

If I have any questions about the study, I may contact the researcher or supervisors.

If I have any questions regarding the ethical conduct of this study, I may contact:

- The Protocol Officer for Ethics in Research, University of Ottawa, Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON K1N 6N5
  Email: ethics@uottawa.ca

The Chairperson of the Research Ethics Committee at the Catholic University
Big Mankon, Bamenda, Cameroon
P.O. Box 782 Mankon
Email: info@catuc.org

-

There are two copies of the consent form, one of which is mine to keep.

Participant's signature: Date:

Researcher's signature: Date:


## Appendix K: Consent Form - Staff

**Title of the study: Exploring the influence of a community based health project on the livelihood of the rural poor in Cameroon: The case of the Kumbo water project**

**Name of researcher**: Patience Lum Ambe
Population Health PhD Program, Faculty of Graduate and Postdoctoral Studies, University of Ottawa

**Supervisor**: Professor Sanni Yaya
120 University, Social Science building, Rm. 8006
University of Ottawa, Ontario, Canada, K1N 6N5

Université d'Ottawa
Faculté des études supérieures et postdoctorales

Programme de doctorat en santé des populations

University of Ottawa
Faculty of Graduate and Postdoctoral Studies

PhD in Population Health Program

**Invitation to Participate:** I am invited to participate in the above-mentioned research. The study is a doctoral thesis conducted by Patience Lum Ambe and supervisor Professor Sanni Yaya, from the University of Ottawa.

**Purpose of the Study:** To examine the influence of the Kumbo water project as it pertains to social and economic welfare of community members.

**Participation:** My participation consists of essentially making myself available for an interview with the Researcher and the validation of the transcription afterward. I am meeting with the Researcher, Patience Lum Ambe, for about 60-90 minutes for an interview within reasonable time after the signature of this consent form. The interview are questions about my knowledge of the project, participation in the project, success and failures of the project, the social and economic impact of the project, sustainability of the project and challenges. The interview is a face to face interview and may be held after normal business hours depending on my schedule and that of the interviewer. The interview session is scheduled at a designated location within the community. I am aware that the information collected will be used as data and analyzed for the study, and may be included in final publications of the report. I am also aware that this study is an independent study from the University of Ottawa.

**Risks:** There will be some social repercussions. My views about the project may be contrary to the views of those managing the project. I have received assurance from the Researcher that every effort will be made to minimise these risks by ensuring that the information I will provide will remain confidential.

**Benefits:** I will not be reimbursed for my participation in this study. My participation in the research may assist in broadening my knowledge about the influence of the project on my livelihood and therefore estimate the project needs when expanding such interventions. it will provide practical guide that will help the community improve their water project and ensure sustainability.

**Confidentiality and anonymity:** I have received assurance from the researcher that she will do her best to keep the information I will share confidential. I understand that the contents will be used only for research purposes and that my confidentiality will be protected. **Anonymity** will be protected by having my name and identification left out of the research, analysis and any possible publications. Pseudo names will be used to protect anonymity.

**Conservation of data:** The data collected on the audio recordings, transcripts and hand-written notes will be kept in a secure manner locked and stored by my supervisor in the International Development and Global Studies Office at the University of Ottawa. The data will only be accessible to the researcher and supervisors of the study and will be stored for seven years. After this period, it will be destroyed.

**Voluntary Participation**: I am under no obligation to participate and if I choose to participate, I can withdraw from the study at any time and/or refuse to answer any questions, without suffering any negative consequences. If I choose to withdraw, all data gathered until the time of withdrawal will be included in the study unless I advise that my information should not be used. The interview will be audio recorded with my concern.

**Acceptance:** I, *(Name of participant)* _____, agree to participate in the above research study conducted by Patience Lum Ambe of the Population Health PhD Program, Faculty of Graduate and Postdoctoral Studies, University of Ottawa, under the supervision of Professor Sanni Yaya.

**Transcripts**: Would you like to review transcripts of your interview? **YES** **NO**

If I have any questions about the study, I may contact the researcher or supervisors.
If I have any questions regarding the ethical conduct of this study, I may contact:

- The Protocol Officer for Ethics in Research, University of Ottawa, Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON K1N 6N5
  Email: ethics@uottawa.ca

The Chairperson of the Research Ethics Committee at the Catholic University
Big Mankon, Bamenda
P.O. Box 782 Mankon
Email: info@catuc.org

-

There are two copies of the consent form, one of which is mine to keep.

Participant's signature: Date:
Researcher's signature: Date:


## Appendix L: Consent Form - Key Informants

**Title of the study: Exploring the influence of a community-based health project on the livelihood of the rural poor in Cameroon: The case of the Kumbo water project**

**Name of researcher**: Patience Lum Ambe
Population Health PhD Program, Faculty of Graduate and Postdoctoral Studies, University of Ottawa

**Supervisor**: Professor Sanni Yaya
120 University, Social Science building, Rm. 8006
University of Ottawa, Ontario, Canada, K1N 6N5

Université d'Ottawa
Faculté des études supérieures et postdoctorales

Programme de doctorat en santé des populations

University of Ottawa
Faculty of Graduate and Postdoctoral Studies

PhD in Population Health Program

**Invitation to Participate:** I am invited to participate in the above mentioned research. The study is a doctoral thesis conducted by Patience Lum Ambe and supervisor Professor Sanni Yaya, from the University of Ottawa.

**Purpose of the Study:** To examine the influence of the Kumbo water project as it pertains to social and economic welfare of community members.

**Participation:** My participation consists of essentially making myself available for an interview with the Researcher and the validation of the transcription afterward. I am meeting with the Researcher, Patience Lum Ambe, for about 60-90 minutes for an interview within reasonable time after the signature of this consent form. The interview are questions about my knowledge of the project, participation in the project, success and failures of the project, the social and economic impact of the project, sustainability of the project and challenges. The interview is a face to face interview and may be held after normal business hours depending on my schedule and that of the interviewer. The interview session is scheduled at a designated location within the community. I am aware that the information collected will be used as data and analyzed for the study, and may be included in final publications of the report. I am also aware that this study is an independent study from the University of Ottawa.

**Risks:** There will be some social repercussions. I might provide information that other community members might not be happy with if known to them. I have received assurance from the Researcher that every effort will be made to minimise this risk by ensuring that the information I provide remain confidential and will be destroyed after seven years.

**Benefits:** I will not be reimbursed for my participation in this study. My participation in the research may assist in broadening my knowledge about the influence of the project on my livelihood and therefore estimate the project needs when expanding such interventions. it will provide practical guide that will help the community improve their water project and ensure sustainability.

**Confidentiality and anonymity:** I have received assurance from the researcher that she will do her best to keep the information I will share confidential. I understand that the contents will be used only for research purposes and that my confidentiality will be protected. **Anonymity** will be protected by having my name and identification left out of the research, analysis and any possible publications. Pseudo names will be used to protect anonymity.

**Conservation of data:** The data collected on the audio recordings, transcripts and hand-written notes will be kept in a secure manner locked and stored by my supervisor in the International Development and Global Studies Office at the University of Ottawa. The data will only be accessible to the researcher and supervisors of the study and will be stored for seven years. After this period, it will be destroyed.

**Voluntary Participation**: I am under no obligation to participate and if I choose to participate, I can withdraw from the study at any time and/or refuse to answer any questions, without suffering any negative consequences. If I choose to withdraw, all data gathered until the time of withdrawal will be included in the study unless I advise that my information should not be used. The interview will be audio recorded with my concern.

**Acceptance:** I, *(Name of participant)* _____, agree to participate in the above research study conducted by Patience Lum Ambe of the Population Health PhD Program, Faculty of Graduate and Postdoctoral Studies, University of Ottawa, under the supervision of Professor Sanni Yaya.

**Transcripts**: Would you like to review transcripts of your interview? **YES** **NO**

If I have any questions about the study, I may contact the researcher or supervisors.

If I have any questions regarding the ethical conduct of this study, I may contact:

- The Protocol Officer for Ethics in Research, University of Ottawa, Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON K1N 6N5

Email: ethics@uottawa.ca

The Chairperson of the Research Ethics Committee at the Catholic University
Big Mankon, Bamenda, Cameroon
P.O. Box 782 Mankon

Email: info@catuc.org

There are two copies of the consent form, one of which is mine to keep.

Participant's signature: Date:

Researcher's signature: Date:

## Appendix M: Ethics approval

**C A T H O L IC UNIVERSITY OF CAMEROON(CATUC), BAMENDA**

P.O. Box 7flE
Bamenda Cameroon
Tel: (E37) EM3-D7-E°1-HE
E-mail: info&catucorQ
Website: u/u/u/'Catuc-oro

Ref/01/2016/research/nl

23/06/2016

To whom it may concern

Dear Sir,

### Ethics Clearance

The Catholic University of Cameroon, C A T U C, Bamenda in a bid to provide quality, practical, professional education and academic excellence, that meets national and international standards, sends out students for research to renowned establishments and institutions as part of their specific area of specialization.

We would, therefore, be grateful if you grant access and if possible assist

**Ms. Ambe Lum Patience, B.Sc., M.A,**
**Ph.D. student from the Population Health program,**
**Faculty of Health Sciences University of Ottawa,**
**Affiliated to the Department of Health Economics Policy and Management,**
**Catholic University of Cameroon, Bamenda,**
**Matriculation No: 7196376**

to gather the vital information, she requires from you and your establishment to accomplish her research project entitled: **Exploring the influence of a community based health project on the livelihood of the rural poor: The case of the Kumbo Water Project,** a doctorate research work being supervised by Sanni Yaya (Ph.D.) at the University of Ottawa, Canada

This certification is valid for the 2016 - 2018 academic years.

Sir/Madam, while counting on w t i r cooperation, accept my very high regards.

Yours

**Appendix O: Ethics approval**

**File Number:** H04-16-09 **Date (mm/dd/yyyy):** 08/12/2016

Université d'Ottawa University of Ottawa

Bureau d'éthique et d'intégrité de la recherche Office of Research Ethics and Integrity

# Ethics Approval Notice

## Health Sciences and Science REB

### Principal Investigator / Supervisor / Co-investigator(s) / Student(s)

| First Name | Last Name | Affiliation | Role |
|---|---|---|---|
| Sanni | Yaya | Health Sciences / Others | Supervisor |
| Patience | Ambe | Health Sciences / Others | Student Researcher |

**File Number:** H04-16-09

**Type of Project:** PhD Thesis

**Title:** Exploring the influence of a community based health project on the livelihood of the rural poor in Cameroon: the case of the Kumbo water project

| Approval Date (mm/dd/yyyy) | Expiry Date (mm/dd/yyyy) | Approval Type |
|---|---|---|
| 08/12/2016 | 08/11/2017 | Approved |

**Special Conditions / Comments:**
N/A



550, rue Cumberland, pièce 154 550 Cumberland Street, room 154 Ottawa
(Ontario) K1N 6N5 Canada Ottawa, Ontario K1N 6N5 Canada
CC: 562-5387 • Téléc./Fax (613) 562-5338
www.recherche.uottawa.ca/deontologie/ www.research.uottawa.ca/ethics/

This is to confirm that the University of Ottawa Research Ethics Board identified above, which operates in accordance with the Tri-Council Policy Statement (2010) and other applicable laws and regulations in Ontario, has examined and approved the ethics application for the above named research project. Ethics approval is valid for the period indicated above and subject to the conditions listed in the section entitled "Special Conditions / Comments".

During the course of the project, the protocol may not be modified without prior written approval from the REB except when necessary to remove participants from immediate endangerment or when the modification(s) pertain to only administrative or logistical components of the project (e.g., change of telephone number). Investigators must also promptly alert the REB of any changes which increase the risk to participant(s), any changes which considerably affect the conduct of the project, all unanticipated and harmful events that occur, and new information that may negatively affect the conduct of the project and safety of the participant(s). Modifications to the project, including consent and recruitment documentation, should be submitted to the Ethics Office for approval using the "Modification to research project" form available at: http://www.research.uottawa.ca/ethics/forms.html

Please submit an annual report to the Ethics Office four weeks before the above-referenced expiry date to request a renewal of this ethics approval. To close the file, a final report must be submitted. These documents can be found at: http://www.research.uottawa.ca/ethics/forms.html

If you have any questions, please do not hesitate to contact the Ethics Office at extension 5387 or by e-mail at:
ethics@uOttawa.ca.