Waterlogged but Thirsty: a Case Study of the Relationship between Water management and Health in Cameroon

Anthony Banyouko Ndah, Xiongzhi Xue*
Coastal and Ocean Management Institute, Xiamen University
**Corresponding author: xzxue@xmu.edu.cn*

Abstract: This paper gives an illustrative view of Cameroon's abundant water resources which unfortunately due to the lack of comprehensive information, an inadequate legal and institutional framework, weak enforcement capacity, poor coordination among agencies and other obstacles to sound, sustainable water management, the country faces serious degradation and depletion of water resources. Consequently, the country suffers from a host of water-related problems, in the form of outbreaks of epidemics.

Keywords: water resources, qualitative depletion, quantitative depletion, water crisis, institutional management, integrated water resource management, water-borne diseases

1 Introduction

Cameroon is endowed with abundant water resources. From Lake Chad in the north to the Atlantic Ocean in the south, it has numerous rivers, lakes and springs. In fact, Cameroon has Africa's largest hydro-electric potential after the DRC. But in most parts of the country, there is little safe drinking water. That leads people to unsafe water from streams and wells located dangerously close to latrines and in some cases very shallow. Recent studies have revealed that of Cameroon's 300 urban centres with 5,000 inhabitants or more, only 98 have water supply networks [1]. Moreover, rapid urbanization in smaller towns has often rendered existing infrastructure inadequate, with frequent service interruptions. Another problem is the amount of water unaccounted for: the average rate of water loss rose from 25% in 1990 to 40% in 2000, clearly indicating an aging network and poor maintenance[2]. Cameroon is therefore replete with numerous water related problems Water-related diseases like cholera and typhoid have thus become endemic in most major cities.

2 Cameroon's water resource base

Cameroon is situated between West and Central Africa at the extreme north-eastern end of the Gulf of Guinea. Cameroon's possesses an Atlantic coastline in the southwest which measures about 400km. The country has a varied climate with wide differences in rainfall and vegetation[3].

The maximum rainfall of 10,000mm occurs in the equatorial zone in the south. Cameroon has a dense network of rivers, most of which all make up the six main basins - Sanaga, Sanaga West, Sanaga South, Benoue, Congo and Lake Chad[4].

The Sanaga basin, located in the centre of the country, is the largest, covering about 29% of the territory. It and the Sanaga West and South basins constitute the Atlantic basin.

Cameroon is the second country in Africa in terms of quantity of available water resources. Her total annual renewable water resources amount to some 283.5 billion m3 or about 17,000 m^3 per capita, using 2006 population estimates[5].

She is ranked 49th out of 182 countries in the world in terms of abundant water supply. The country has average annual available water per inhabitant of 21,000 m^3 that is three times the world's average (7,000 m^3) but portable water still remains a scarce resource because of inadequate management practices (Ako Ako et al., 2009).

2.1 Users of Water Resources

It is estimated that about 1 billion m^3 of the total renewable water resources is withdrawn annually in Cameroon. In 1987, about 46% of all water resources was withdrawn for domestic purposes, 35% was used up by agriculture and 19% for industrial uses.

Agriculture has increasingly become the largest water user to the detriment of domestic users. In 2007 to present, only about 7% of the water use is domestic while 76% is used up by agriculture, 17% by the industrial sector. Paradoxically, the population of the country has almost doubled since 1987, meaning the need for more water.

[1]http://waterwiki.net/index.php/Facing_the_Water_Challenges_in_Cameroon:_A_WWDR3_Case_Study
[2]http://waterwiki.net/index.php/Facing_the_Water_Challenges_in_Cameroon:_A_WWDR3_Case_Study
[3]http://waterwiki.net/index.php/Cameroon
[4]http://waterwiki.net/index.php/Cameroon
[5]http://waterwiki.net/index.php/Cameroon

978-1-935068-16-7

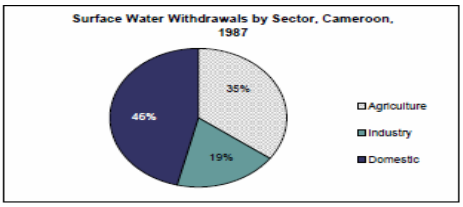

Figure1. Surface water withdrawal in Cameroon in 1987 (http://earthtrends.wri.org/countryprofile/Cameroon)

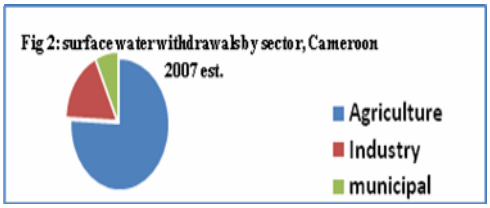

Figure 2. Surface water withdrawals by sector, Cameroon (Adapted from Aquastat, 2007[6])

It should be further noted that the two biggest water users (agriculture and industry) not only reduce the quantity of both surface and underground water resources available for human consumption but have also contributed enormously to the qualitative depletion of water resources through pollution (direct and diffused) exposing the population to unsafe sources of water and water-borne infections.

3 Water resource management in Cameroon

Water is a highly critical resource in Africa in general and Cameroon in particular. Water resources face increasing pressure from all fronts – for domestic consumption, agriculture, industries. This pressure includes direct water extraction which affects water quantity, and the contamination and poor utilization of water that affects water quality. It therefore requires a vigorous and effective management framework to redress these problems and prevent the degradation of vital water resources.

3.1 Institutional Management

Water resources in Cameroon have always been managed using the Institutional approach with little or no coordination between the different institutions.

3.1.1 The National Water Committee (NWC)

This institution was created by decree in 1985 as a consultative body to coordinate activities in the water sector. Under the 1998 Water Law, the role of the National Water Committee (NWC) to coordinate the actions of the numerous institutions and stakeholders involved in the water sector was again reiterated. However, it has met only infrequently and never fulfilled its intended role.

3.1.2 Cameroon Water Partnership (GWP-Cm)

GWP-Cm, an institution created in June 2005, is the functional part of the Global Water Partnership (GWP) network operating in Cameroon[7]. It functions as a neutral multi-stakeholder platform that regroups all categories of stakeholders in the water sector in Cameroon, and is the operational part of Global Water Partnership (GWP) network in Cameroon[8]. Unfortunately, cooperation between the different actors and agencies has always been weak, with conflicting interest, different sectoral plans and different stakeholders. Problems of corruption in the water sector of and inadequate training of water managers, have contributed a great deal to the water crisis and the resulting water-borne diseases.

Thus, the serious problem of water resources depletion and degradation in Cameroon is not caused by the availability of water – it is the poor institutional management of the resources, coupled with inadequate political will and commitment for the long term (Lekunze, R.N. 2001). The patchiness of information available on the quality and quantity of water resources is also a major constraint to successful water resources management, leading to the degradation and depletion of water resources and a handicap for poverty alleviation.

Studies have revealed that in Cameroon's major cities such as Yaoundé, Douala etc. water points being exploited for domestic consumption are highly contaminated. In Yaoundé for example, streams and wells located in the upper Nfoundi watershed have been found to contain high concentrations of fecal coliforms and fecal Streptococci (Kuitcha D. et al., 2010), some having values of BOD as high as 297.5 mg O^2 dm^{-3} and Oxydability 50.255 mg O^2 dm^{-3} (Ajeagah, G. et al., 2010). The world health organization (W.H.O.) norm for organic matter as indicated by the oxydability test should be below 5 mg O2 dm-3 but the value recorded in Yaoundé can reach 29.7-15.12 mg O2 dm-3 which indicates that the population of Yaoundé and its environs is exposed to acute pollution which can lead to numerous water related health hazards (Ajeagah, G. et al., 2010).

4 Water-related Diseases in Cameroon

The analysis of the poor management and degradation of water resources in Cameroon leaves no doubt that the Country is an El Dorado of water-related diseases. Water-borne infections occupy third place among the diseases which prevail in Cameroon (Fonteh, 2003)[9]. These diseases responsible for approximately 50% of the cases of deaths recorded in the country include cholera, dysentery, diarrhea, typhoid. In fact, in 2000 approximately 15% of children of less than 5 years died in Cameroon

[6]http://waterwiki.net/index.php/Cameroon

[7]http://www.gwpcm.org/eng/dossiers/dossiers.php?id_dossier=3
[8]http://www.gwpcm.org/eng/dossiers/dossiers.php?id_dossier=3

mainly because of these diseases[10]. Among children under 4 years, diarrhea accounts for about 10% of all deaths. Moreover, other vector-borne diseases, though not water-borne, but of high incidence in the country, are related to the poor management of the water environment. These include: malaria, yellow fever, Dengue fever, Japanese Encephalitis, Chikungunya, all caused by different types of water inhabiting mosquitoes.

4.1 Cholera outbreaks in Douala

Cholera has been endemic in Douala since 1971. Results of studies reveal that most cholera outbreaks start in Bepanda, a slum area built on a garbage dump in a swampy zone fed by drainage ditches carrying faecal pollution from neighbouring upstream districts[11]. Access to the public water system is inadequate. With only 65000 persons having access to pipe-borne water out of 3 million inhabitants, city dwellers in most areas must get water from the 70000 urban wells (estimated in 2004) that are often less than 1.5 deep[12]. In 2004, a severe cholera epidemic broke out in Douala. 5,020 cases and 69 deaths were reported among hospital patients. The overall attack rate for Douala was 209 cases per 100,000 inhabitants, with a case-fatality ratio of 1.37%[13].

4.2 Cholera outbreak in Northern Cameroon

In November 2009, Cholera killed at least 51 people in Northern Cameroon. In this part of Cameroon Cholera epidemics are frequent because water is scarce; and existing boreholes and wells are insufficient to meet the needs of the population (IRIN, 15 Oct 2009)[14]. The number of infected persons rose from 270 to 696 at the time operations were launched by the Red Cross to help the victims, with a lethality rate as high as 12% (I R C and RCS (January 2010).

These two cases mentioned are not the only cases of cholera outbreak in Cameroon. Cholera and other water-borne epidemics are rampant in most parts of the country especially in the major urban centres and some rural communities not served with portable water. There is therefore an urgent need to improve water management in the country.

5 Integrated Water Resources Management (IWRM) in Cameroon

There is an increasing recognition in Cameroon that in order to safeguard water resources from depletion and degradation, concerted action is needed on all fronts, including the different sectors of agriculture, forestry, industry, transport, urban and spatial planning, population planning, and based on a participatory management. Such a holistic approach is what is referred to as Integrated Water Resources Management (IWRM) (Lekunze, R.N.2001). A 1991 UNDP report argues that, "IWRM is necessary to combat increasing water scarcity and pollution" and mentioned methods, which include water conservation and reuse, water harvesting, and waste management (Ako, AA et al. 2009).

Cameroon has adopted a national IWRM Plan and an Action Plan for Basins (APB) since the end of 2007. This plan was elaborated by Ministry of Water and Energy (MINEE) with input from multi stakeholders using the Global Water Partnership as a platform for participation (Ako, AA et al. 2009). However, IWRM though accepted in Cameroon as the starting point for policies that can enhance sustainable water resources management and development, and ensure water security, conditions for effective use of the IWRM approach are not yet in place, leading to maintenance of the status quo.

6 Conclusion

All Developing countries strive to increase their GDP and stimulate economic growth. Cameroon is no exception. As a result, much emphasis is placed on resources, including water resources allocation to the agricultural and industrial sectors of the economy and less for domestic consumption. These two sectors which withdraw large amounts of water are also the biggest polluters of ground and surface water resources, leaving the populations thirsty and /or forced to consume the polluted water.

At this juncture, it is imperative to reiterate the role of the availability or non-availability of portable water as an indispensable agent of development or underdevelopment. The equation is a simple and direct one:

Availability of abundant supplies of portable water = a healthier and dynamic labour force and faster rate of economic development.

The non-availability of sufficient portable water = a sick and weak labour force leading to a slow, imperceptible economic development.

A high incidence of water-borne diseases renders an economy poor in two main ways:

- The high cost of combating cholera, diarrhea and other epidemics imposes a heavy burden on the financial resources of countries.
- A sick and weak labour force reduces the production potential of the country and discourages foreign investment– a major agent of development.

Cameroon faces these two problems and the situation seems to be getting worst every year especially with the rapid urbanization and fast-growing population. For example health expenditure in Cameroon for 2001–2002 amounted to around US$110 million, which corresponded to 4.5% of the national budget and about 1% of

[11] www.ncbi.nlm.nih.gov/pubmed/16924824
[12] www.ncbi.nlm.nih.gov/pubmed/16924824
[13] www.ncbi.nlm.nih.gov/pubmed/16924824
[14] http://washafrica.wordpress.com/category/topics/water-related-diseases/page/2/(21)

978-1-935068-16-7 © 2010 SciRes.

GDP[15], coupled with the very low rate of growth of FDI. It is therefore imperative for the Cameroonian Government to make the sustainable Management of water resources a top priority as it will lead directly to socio-economic development sought for. Providing adequate portable water to the populations will also put Cameroon on the right track towards achieving the Millennium Development Goals (MDGs).

Suggestion: The IWRM plan of Cameroon should be implemented and moved from a simple slogan to an effective tool of development and wellbeing. Only a global vision like IWRM can take into account the dynamics of water resources within hydrographic basins or aquifers, with the participation of the all the actors of the water domain, reconciling all development stakeholders of the country without compromising the capacity of future generations of assuring theirs.

Such an approach of water resources management must be highly participatory and necessarily community-based if it is to achieve its intended goals and objectives.

References

[1] Ako, AA et al. 2009. Water quality and occurrence of water-borne diseases in the Douala 4th District, Cameroon. Water Science and Technology. 2009; 59(12):2321-9. PubMed PMID: 19542637

[2] Ako, AA et al. 2009. Water Resources Management and Integrated Water Resources Management (IWRM) in Cameroon, Springer Science+Business Media B.V. 2009

[3] Hassan, R. 2006. Vulnerability of water resources in North Cameroon to climate Change. Policy Note No.33, August 2006, CEEPA

[4] International Red Cross and Red Crescent Society (January 2010) Cameroon: Cholera; DREF operation n° MDRCM007 GLIDE n° EP-2009-000021-CMR

[5] Kuitcha D. et al., 2010. Bacterial contamination of water points of the upper Mfoundi watershed, Yaounde, Cameroon; African Journal of Microbiology Research Vol. 4 (7), pp.568-574,. http://www.academicjournals.org/ajmr

[6] Ajeagah, G. et al., 2010. Monitoring of organic load in a tropical urban river basin (Cameroon) by means of BOD and oxydability measurements. Ecohydrology and Hydrobiology; DOI: 10.2478/v10104-009-0049-1

[7] Eneke Takem G. et al., 2009. Pollution characteristics of alluvial groundwater from springs and bore wells in semi-urban informal settlements of Douala, Cameroon, Western Africa; Springer-Verlag 2009

[8] Lekunze, R.N.(2001). Assessing stakeholder participation in Integrated Water Resource Management. The role of Youth in Community Water Management Projects in Cameroon; Masters Thesis, LUMES, Belgium.

[15]http://waterwiki.net/index.php/Facing_the_Water_Challenges_in_Cameroon:_A_WWDR3_Case_Study