

# The State of Water Supply in Rural and Peri – Urban Communities in Adamawa State, Nigeria

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**Abstract—**A significant fraction of residents in Mubi town of Adamawa State has no access to potable water provided by public water authorities. Often residents rely on unofficial sources. They buy water from small scale water vendors or collect it from unimproved water sources; they also rely on self-water supply (free source) such as rivers, perennial streams, water ponds and unprotected wells which is susceptible to water borne diseases such as typhoid fever, cholera, dysentery, malaria parasites etc. Potable water supply impacts significantly on the health, economic productivity and quality of life of the people. This paper draws on qualitative research to document citizens' strategies for accessing water services in Mubi amidst rising demand. The capacity of government to provide good quality water is only partially available hence informal and small scale private water providers fill the gap. Moreover, the study reveals that the incentives for corruption in the water sector are significant given that people are cognizant about the failures of public service delivery.

**Keywords:** Potable water; water borne diseases; informal and small scale private water providers; Mubi.

## INTRODUCTION

Access to water reflects the health status of a country. Safe water includes treated surface water, as well as untreated but uncontaminated water from source such as natural springs and sanitary wells and protected boreholes (Ishaku et al., 2011). On average, a person needs about 20 liters of safe water each day to meet his or her daily metabolic, hygiene and domestic needs. In urban areas the source may be public standpipe located not more than 200 meters away. In rural areas, it implies that members of the household do not have to spend a disproportionate part of the day fetching water (World Bank Group, 2002).

On the other hand, the lack of access to potable water supply leads to incidences of death and illness. In most rural and peri-urban communities, residents spend considerable amount of time in fetching water, this time expended on sourcing water can be used for other activities. The World Bank Group (2004)

reported that about 3.5 billion people worldwide (54%) had access to piped water supply house connections. Another 1.3 million (20%) had access to "improved water source" through other means than house connections including standpipes. Finally, more than 1.2 billion people (16%) did not have access to improve source, meaning that they have to revert to unprotected wells or springs canals, lakes or river to fetch water. It should be noted however, that access to an improved source of water does not necessarily imply that it is safe to drink from that source. A large proportion of the peri-urban population in the state relies on informal and private water providers, little is known about the way citizens cope with unreliable water supply in the rural and peri- urban communities. This paper draws on qualitative research to examine citizens' strategies for accessing water services in rural and peri- urban communities of Adamawa state.

## STUDY AREA

Mubi is the capital of Mubi North Local Government Area of Adamawa State in Nigeria. It lies on latitude 10°32'N to 10°11'N and longitude 13°12'E to 13°35'E, with a total land mass of 506.4Km<sup>2</sup> and a population size of 759,045 people. Rainfall begins in April, progressing and reaching its peak in July/August and stops most of the time in October. Average annual rainfall ranges between 998 mm and 1262 mm. The areas just below the Mandara Mountains record the highest rains. Rainfall intensity is high with rainy days making up to 87 % of the days with more than 20 mm of rainfall (Ray, 2007). Mubi region falls within the Sudan Savanna belt of Nigeria's vegetation zones. The region's vegetation type is best referred to as Combretaceous woodland Savanna. It is made up of grasses, aquatic weeds in river valleys and dry land weeds interspaced by shrubs and woody plants (Adebayo, 2004).

## MATERIALS AND METHODS

A comprehensive study involving the use of journals, books and other related literature was employed in this review of water supply dilemma in Mubi North and Nigeria. Data reviewed includes household access to water supply and case studies on water supply situation in rural and peri- urban settlements in Nigeria. Also, participant's observation was a vital tool used during study.

## DISCUSSION

### State of water supply in rural communities

Most of the rural communities in Adamawa state are lagging significantly in water supply. High poverty level in many rural areas and depressed levels of service sustainability abounds and these indicate a critical need for focused attention to the provision of potable water to rural communities. Provision of adequate domestic water supply in the rural communities should be a major priority for government and stakeholders in the water sector. Currently, many rural sponsored water supply projects and programs are ongoing, some of which are adopting new technology like the solar systems e.t.c. It is essential that this is accompanied by adequate attention to the crucial aspect of sustainability if any gains are not to be short-lived.

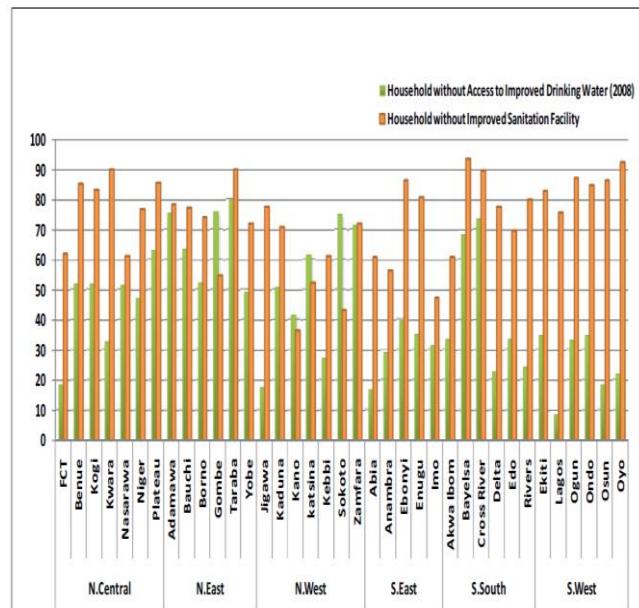
Generally, rural water supply provision is characterized by low cost, simple and sustainable technologies. Adoption of a particular technology such as Hand pump equipped boreholes and wells; Rainwater harvesting; Hand-dug wells; Gravity-fed systems; and Small-scale pumped systems, for improved water supplies depends on environmental, socio-economic and political conditions. In the past two decades hand pumps have infiltrated most of the rural and peri- urban communities in Adamawa state and environs. According to World Bank Group (1997), despite this low level of sustainability, hand pumps are likely to remain a major method of delivery in rural water supplies, as they are still considered most appropriate and popular solution in many case. It can be linked to the relative ease of access to water and does not require treatment prior to drinking. Wells and boreholes with hand pumps were therefore promoted as the most viable option for rural water supply in many developing countries.

Despite this popularity of the hand pump, there are evidences that it has failed to deliver satisfactory levels of sustainability. In 1994, Diwi Consultant and BIDR estimated that 40% - 50% of hand pumps were not working, and according to Peter and Reed (2004 & b) there are currently approximately 250,000 hand pumps in Africa, less than half of which are operational. Therefore, rural water supply in Adamawa state and Nigeria at large hasn't met challenges of adequate water supply and contribution to health, economic, social, and cultural development of rural communities as many rely on self water supply for both domestic and irrigation purposes.

### Water Supply and Sanitation in Nigeria

According to FMWR (2011) report, Nigeria has huge water resources potential estimated at 267 billion cubic meters of surface water and 92 billion cubic meters of ground water. The current water supply service coverage in the country is 58%, i.e. 87 million people while sanitation is 32% i.e. 54 million. About half of the Nigerian population, i.e. 70 million people, lacks access to potable water supply. This

represents about 6% of the world's population who do not have access to safe drinking water. About 194,000 of children under 5 years old die annually in Nigeria due to cholera, diarrhoea and other related water borne diseases, translating into the water-related death of 868 children on a daily basis in Nigeria. Most of the rich neighbourhoods and government reservation areas in urban centres have piped domestic connections. The less affluent use yard taps, protected hand-dug wells and water tankers. The people who are actually benefiting from subsidised water are the relatively well-off people; the poor are generally not connected to a piped water supply. Many are buying their water from water vendors and paying many times more than the more affluent consumers.



**Fig 1:** Current Status of Water Supply and Sanitation (FMWR, 2011)

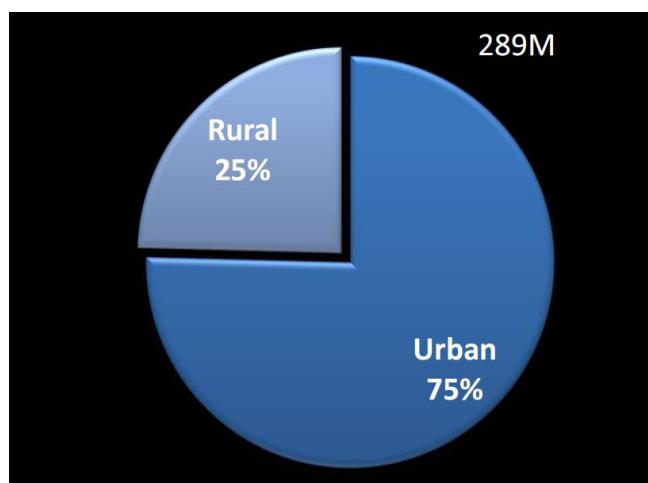
From figure 1, it is apparent that Adamawa state amongst other states lacks adequate water infrastructure despite investments into the water sector by both federal state and donor agencies. This figure exceeds the total foreign aid and debt relief inflow into the region as a result of under-development and poor management of water resources.

A recent study conducted in Wukari town by Ishaku et al. (2010) noted that the water demand for the northeast Nigeria was 30 l/p/d. World Bank estimates that an average 20 - 50 liters of safe water is needed by an individual for daily metabolic and hygiene. This figure is slightly above the national water requirements for Nigeria which pegs it at 23l/p/d for rural areas and 60l/p/d for urban areas (Ishaku et al., 2011). In the same vein, WHO & UNICEF (2000) estimates that 12% of the world's population consumes 80% of the available water, leaving 1.1 billion people (1/6th of world population) without access to adequate water supplies. This is aggravated by the fact that 2.4 billion people lack access to adequate sanitation facilities. Figure 2 shows that by

2025 water shortages could affect two out of three persons globally, with developing nations most vulnerable.

### **Impact of population on water resources**

Changes in the Nation's demographics particularly the steady rapid growth in our population and the rate of urbanization is becoming a challenge as trends require adequate forecasting and preparation to accurately forecast water demand, challenges and their implications to water resource management in the various communities. The world population is expected to double in the next 50 years and Nigeria being one of the fastest growing nations is projected to reach 289 million by 2050. In the same vein, the projected population growth by years 2020 and 2025 would be 210 million and 225 million respectively (FMWR, 2011). Rapid rate of urbanization in Nigeria is about 4% per annum. The implication of this trend is a meteoric rise in the number and percentage of the population dwelling in urban centers which increases the demand for water and the pressure on the water supply system. Accordingly, for the estimated population size by year 2050 of 289 million, it has been forecasted that the percentages of the Nigerian population in urban and rural areas will be 75% and 25% respectively.



**Fig 2:** Urban/ rural population growth by year 2050 (FMWR, 2011)

The implication of this projected population explosion is the limitation in the water consumption requirement by 2050. Thus, Nigeria needs 56 billion litres of water per day of potable water supply for domestic use only as well as enough water for industrial and agricultural use. Projected Urban Population of 75% will place additional pressure on government as it pertains to water supply. This is a wakeup call on all tiers of government to expedite sustainable infrastructure that will install new and augment existing supply of potable water to the populace.

### **Sustaining water resources projects**

In There exist a huge funding gap towards the execution of the sector key programmes and

initiatives. The government is currently saddled with the challenge of coping with financial constraint of the sector with an annual estimate of \$2.5 billion to meet the water and sanitation target between 2011 and 2015. The Federal Government is making frantic effort towards the deployment of right funding strategy for the recovery of its investment in order to ensure the sustainability of the water sector

### Operations and Maintenance Inefficiencies

As earlier discussed, one of the major setbacks to achievement provision of potable in rural and peri-urban communities is poor maintenance culture. Operation and maintenance of water schemes ensures improving the efficiency, effectiveness and sustainability of the water supply. Activities encompassing technical, managerial, social, financial and institutional must be geared towards eradication of principal limitations hampering development and provision of water supply in the state. Operations have always poised a great challenge for the water resource sector. This problem could range from the limited fund available within the sector, limited capacity and poor maintenance culture of Nigeria.

### Capacity Building Constraint

Rapid increase in population and the increased demand in water resources infrastructure entail that expansion in capacity to cope with the level of demand in water and its infrastructure, adequate human capital would be required. Key institutions like the National Water Resources Institute in Kaduna, state water corporations, local government water schemes etc need be strengthened and adequately staffed to cope with the demand for provision of services to populace. Remuneration of personnel attached to oversee affairs of water schemes should be consistent as this will ensure responsibility.

### Corruption in the water sector

Water management is complex and needs governance at different levels and areas, from watersheds to local water resources management, from national policies to specific local solutions (UNDP, 2011). The physical properties of water imply that these governance levels are interrelated (geographically, institutionally and politically). Choices regarding central control over water resources (big dams or many smaller dams, large-scale public irrigation or many smaller farmer-managed irrigation systems, central or decentralized water quality monitoring) influence the governance structure and, by extension, transparency and accountability relations. Levels of corruption risk vary based on those relations. Corruption in the provision of water in rural and peri- urban communities is mainly entwined with legal activities, political governance and other social processes. Corruption in the water sector as it relates to rural and peri- urban communities includes the following:

- Poor staffing in various water schemes can increase and entrench corruption. Poor quality of construction and maintenance of water works, 'white elephants', and pollution of water may be due to poor management capacity or lack of government funds, rather than to corruption. Mismanagement does not equal corruption; thus fighting corruption is not the sole solution for combating poor performance. Yet at the same time, many anti-corruption measures such as increased citizens' oversight do not only curb corruption, but may also enhance the quality of the policy and management decisions and their implementation (UNDP, 2011).
- Corruption in the procurement process is a major concern. For example, procurement processes for the installation of water works might be affected by private companies bidding with unrealistically low prices made possible by criminal money. This kind of low bidding can be an effort to launder money obtained illegally.
- Construction of very low standard water schemes are offered during election campaigns to win votes. These schemes are not sustainable as majority of them park up shortly after commissioning. This practice is not corrupt in itself, but it is notable that politicians who have been found to embezzle funds have used populist promises to get in office, and providing substandard emergency water works/ schemes can be an effective way to win votes.

The poor are affected more by corruption than the rich (UNDP, 2008a, b, c). In the water sector, this stems from the fact that any increase in costs for water services affects them relatively more extensively than the rich. UNDP (2011) noted that whether poor or rich, people cannot avoid the impact: water is a basic need for which there is no alternative. The poor have less social and political power and therefore they are usually the victims, not the culprits of corruption. They pay the price for poor performance.

Corruption impacts on the poor in the following ways:

- Water from tankers is more costly than a regular connection. For example in Lima, Peru, slum-dwellers pay five times more per cubic meter of water in comparison to those living in higher-income parts of the city (Defensoria, 2005). Corruption can prevent the building of new pipe networks and connections; the poor are thus forced to buy expensive and low quality tanker water, while the rich benefit from subsidies to the public supply system with higher quality piped water (Swyngedouw, 1997).

- Less water infrastructure e.g. hand pump, tube wells etc. is built and maintained because of overpricing related to corruption.
- In peri-urban settlements, bribes need to be paid to get a water connection. These extra costs might exclude the most marginalized households from gaining access to in-home connections.
- Low quality river water affects poor farmers who use the water to irrigate. This might be linked to corruption when pollution is not stopped because companies that pollute river water evade control and/or punishment by bribing officials.
- Poor-quality drinking water and sanitation services disproportionately affect children from poorer families; many children in such communities die from diarrheal illnesses spread by contaminated water. This is particularly true because the burden of providing households with water lies mostly with women and children in developing countries. Moreover, if children get ill from diarrhea it is their mothers who do the caring.

More importantly, good democratic practices at national and local government levels should include fair elections, accountability of politicians towards their constituencies and free press; these will help a great deal in curbing corruption in general.



**Fig 3:** The state of some rural communities in Nigeria (FMWR, 2011)

#### Stakeholder's Roles in Improving Water Supply

Ensuring stability in the provision of water in rural and peri-urban communities in Adamawa state involves responsibility from major stakeholders. Participation and partnering at all levels is needed as these will increase sense of ownership and promote judicious utilization and maintenance of available resources. Partnering, a very vital tool must be employed by stakeholders to ensure development of a workable management strategy for water supply in

this communities. Powerful stakeholders with genuine interest in water supply scheme need be encouraged; some stakeholders will be willing to invest in the water supply of their communities only if management system of schemes is redefined.

### Politicians

In environments where major policies are driven by political balance, political parties and individuals at the helm of power also play a significant role in provision of water to these communities in Adamawa state. Politics plays a vital role in implementation of any policy. Politicians influences citing of projects in wards where need is urgent; politicians influences construction of water schemes in a bid to retain popularity. Provision of water need to be seen as a major priority to players in the political scene; provision of water to wards in the local government and states should be seen as a legitimate right of citizenry and not just a favour, as long as water is utilized primarily for basic human activities. Rather than embarking on white elephant project, government at all levels should see provision of water in the rural and peri- urban communities as a major responsibility. Most communities in the state accesses water through community water projects which are managed by local government and overseen by the sole administrator of the local government. The efficiency of these water schemes in ensuring reliable provision of water to citizens greatly depends on the will of the local political leaders. Unfortunately, most politicians and elected leaders are not measuring up to expectation from the citizenry; these can be seen from the perceived disappointments from the citizens.

### Government Authorities and Donor agencies

Federal, State and the Local Government Authorities are responsible for the provision and monitoring of water services in line with the Millennium development goals (MDGs). Some of roles played by local government are construction of water wells and monitoring of the water committees particularly on performance on service delivery and financial management; however, there is a general neglect in public amenities in Nigeria, Adamawa state inclusive, the 'I don't care' attitude have hampered efficiency in the provision of potable water to the populace. Non-governmental organizations (NGOs) are important actors in the improvement of access to water. NGOs provide both financial and technical support to citizens for the construction and management of community water projects.

### Water vendors

Water vendors play a great role in enabling citizens to access water. They exist in many forms and "may operate water kiosks, where they sell water from a shallow well, a borehole, a commercial water connection, or a household connection to the piped network" (Kjellén & McGranahan, 2006, p. 2). Water vendors relieve citizens with the troubles to walk long distances or spend long hours looking for water. Yet,

citizens pay money in exchange to the service they get from water vendors.

### **Strategies for alleviating present water misery**

In formulating a sustainable strategy for water supply to the communities, a major ingredient that should be considered is reliability of the to-be adopted technology. The following strategies can be adopted to ease stress of scarcity in communities.

#### Provision of water works and private deep wells

Government, donor agencies and wealthy philanthropists can construct new water schemes in the rural areas, Adamawa state is blessed with natural water bodies which can be utilized to alleviate water stress presently witnessed by the rural populace; drilling of deep wells can also be provided as a major source of water to community.

#### Installing water pumps and reserve tanks

This strategy will be very useful after major rural water schemes have been provided; households can be linked with schemes with piped water connections. In the event of low water pressure arising from altitude or nature of terrain, water users will be availed opportunity of water flowing long enough to fill their storage facilities.

#### Buying electric generators

Erratic power supply and low voltages affect the supply of water. Most water scheme utilizes power for lifting water to storage facilities. Power breakdown causes water shortages. Erratic and low voltage causes two problems; (i) inability to run the water pumps, and (ii) creates high risk for electric shock to the pumps.

The findings of this research are many, however, the most significant and relevant bordered on

- i) General overview of water supply in Mubi, Adamawa state, Nigeria
- ii) Sustaining water resources projects in the rural and peri- urban communities
- iii) Stakeholder's Roles in Improving Water Supply in rural communities
- iv) Strategies for alleviating present water misery

Access to water in Adamawa state is significantly inadequate and highly unreliable. Actors particularly water users, providers and politicians are insensitive to water supply disruptions. This means that citizens can tolerate a certain amount of intermittence as well as poor quality of water. Nganyayuka et al. (2013) noted that politicians use this information as a cheap political point-scoring capital during elections. Promises to end water woes have been getting higher coverage. These unfulfilled promises and delayed responses to water problems induce citizens to adopt long term coping strategies such as drilling deep wells.

Corruption is considered by many as the way of life consequently making the poor and powerless

vulnerable. Despite the efforts by the government to combat corruption in the public sector, by establishing the Economic and Financial Crimes Commission (EFCC), its impacts have not been realized particularly at the grassroots level.

## CONCLUSION

There is a huge responsibility on part of government and citizens in providing good quality water. Activities militating against adequate provision of potable water must be put in check if defined goals must be attained. Further research is needed to explore more viable alternatives for water supply processes and maintenance techniques to ensure sustainability. From the corruption perspective, there is a need of educating communities on danger of electing leaders without a clear goal plan for the water sector and likes.

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