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Assessment of Challenges of Rural Water Supply in Yola-South Local Government Area, Adamawa State, Nigeria

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Abstract

The study assessed challenges of rural water supply in Yola-South Local Government Area (LGA), Adamawa State, Nigeria. Two wards and a total of 100 households (50 from each ward) were selected through purposive and random sampling methods, respectively. Structured questionnaire, interview and group discussion were applied in the collection of data. Descriptive statistics was used in the data analysis. Results showed that the majority of the residents in Wuro-Modibbo and Lakare wards accounted for those that obtained water supply from well-water source, with 52.0% and 60.0%, respectively. Most of the respondents used head/hand in conveying water to their houses, with 52.0% and 54.0% for Wuro-Modibbo and Lakare wards, respectively. Also, across the board, the majority of households in the area had water supply from taps only once a week. Similarly, a larger chunk (54.0%) of the respondents experienced water scarcity throughout the year, with 40.0% and 32.0% of the residents in Wuro-Modibbo and Lakare wards, respectively, spending at least half an hour to obtain water from sources. Almost all the residents used water for household chores only, lamenting for less government and community interventions. It could be concluded that well-water was the major source of water supply in the area, with respondents fetching water on their heads or by hand. There was also a scarcity of water throughout the year. It is recommended that the government and communities should collaborate in making water infrastructure available for the sake of sustainability in the area.

Keywords: Adamawa, challenges, Nigeria, scarcity, supply, water.

INTRODUCTION

Water is said to be fundamental to the existence of humans, animals and plants generally. Its important role in domestic chores, industrial uses, construction fields, irrigation and several other endevours cannot be over-emphasised. The accessibility to wholesome water that is safe for all facets of the commitments in communities, noted Akpor and Muchie (2011), is crucial not minding the variation in earnings of individuals, educational statuses, racial inclinations,

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ethnicities, religious affiliations or geographical locations. Stating the magnitude of the requirements, UNICEF (2015) reported that about 663 million people all over the world did not have access to improved water sources. In an attempt to realisation of clean safe water and environment particularly for children to grow properly, UNICEF (2018) enshrined as a right in article 24 of the Convention on the Rights of the Child, a major thrust of the new UNICEF Strategic Plan 2018-2021, the provision of safe and secure Water, Sanitation and Hygiene services (WASH), in addition to the conducive physical environment.

The above efforts by UNICEF warranted the organisation to spend a whooping sum of US$1 billion globally on programmes on Goal Area 4, with US$912 million on WASH and US$99 million on other output areas of Goal Area 4. However, the access to WASH is further made one of the Sustainable Development Goals (SDG) agenda which is that by 2030, the accessibility will not only be universal but should cover both institutions of learning for pupils and households. In furtherance of this course, Andres *et al.* (2019) reported that a staggering US$320 billion was spent yearly by the World Bank in middle and less-developed nations worldwide as subsidies for water and sanitation. Of this huge sum, about 56.00% still benefited the wealthiest, while only a meagre 6.00% went to the poorest quintile which the assistance was meant to reach. This is simply indicating how important water is to the unprivileged global communities, and yet its unavailability.

Tackling the problems associated with wholesome water supply in both rural and urban dwellings, in a broader sense, is being taken seriously by both government and non-government institutions across the globe. The MDWSGI (2013)'s efforts in India towards the massive provision of portable water supply on sustainable basis is a clear indication in the direction of achieving this giant feat. While Walters and Javernick-Will (2015) findings that the sustainability of water supply in rural areas is a function of integrated developmental interactions of the financial, technical, social and environmental indices is apt, WHO's (2016) declaration and need for enforcement of "water for rural areas is a right" in order to keep to healthy living deserved applauding. Any efforts less than these would lead to premature failure of the water system. That is why WBG (2017) endorsed the aspect of bringing together the same platform, knowledge, financing and implementation as a model. It is believed that this would foster rapid sustainable development since the bank's know-how and countries' resources are harnessed together giving a strong better synergy during the action. The concept has been further explained in Weststrate (2018) and also posited by Hope *et al.* (2020) rethinking the economics of water for Africa. However, what remains now is to trigger or involve community participation which will bring about partnerships, hence widening the immense chances of sustainability as advanced in Hove *et al.* (2019), Machado *et al.* (2019) and Hanak *et al.* (2019).

In Nigeria, a country with slightly over 200 million people out of which up to 80.00% reside in rural areas, Obeta (2018) observed that there was a pronounced shortage of safe water supply among households in rural communities across the country. And studies indicate this huge gap in the inadequacy of water supply in order for authorities to make efforts toward solving this trend and maintaining sustainability is minimal. In order to achieve the Millennium Development Goals (MDG)'s mandate of provision of safe water supply and sanitation for all by the year 2015, Nwankwoala (2011) noted that the Federal Government of Nigeria (FGN) established several water projects which failed to address this anomaly, but yielded minimal success. This report was further supported by Adeleye *et al.* (2014) findings that in Nigeria and Niger, several Rural Water Supply Schemes (RWSSs) collapsed in most areas except for a few. In fact, Sekyere *et al.* (2020) stated that many countries across the world

experience water shortage, and the increasing incidences of desertification and drought further made the trend worse. Meanwhile, other activities such as the wide application of farm chemicals like pesticide and herbicides serve as water resources pollution sources (Delphine *et al.,* 2020). It is for these reasons among others that Ali *et al.* (2020) asserted that measures for the conservation of water are rapidly gaining a necessary position in both rural and urban areas in developing and developed economies.

It is against the backdrop of paucity of information on the availability of safe water and its sustainability in rural settings; and difficulty in its accessibility that this study attempted to investigate the sources of water supply, methods of conveyance of water, accessibility to safe water, uses to which water is put, level of government intervention and challenges associated with access in the area.

MATERIALS AND METHODS

The area of study

The area of study, Yola-South Local Government Area (LGA), is one of the 21 LGAs that formed Adamawa State, Nigeria. It is located on Latitude 9^0 12′ 10″ N and Longitude 12^0 28′ 48″ E. It occupies an area of about 8, 068 Km^2, with an altitude of 198.9 meters above sea level. The area has a total population of 226, 810 people based on 2011 projections. The LGA shares borders with Yola-North to the North, Fufore LGA to the East and South, and Demsa LGA to the West (Adebayo, 1999).

The people of the LGA are dominantly engaged in agriculture, mainly growing crops and raising livestock. The remaining population in the area are either engaged in petty trading or civil service. Major crops cultivated are cereals like maize, rice, millets and sorghum. Other crops grown on a small scale are cowpea, beniseeds, wheat and groundnuts; and root crops such as yams, cassava, cocoyam and potatoes. Orchards are also owned by a few. Livestock kept include cattle, sheep, goats and poultry generally. Some sideline economic activities such as beekeeping, hunting and pottery are practiced by a few.

Sampling procedure and data collection

Purposive and random sampling methods were employed in the selection of wards and households or respondents, respectively. Of the ten wards in the LGA, two wards with higher population density were selected purposely. And in each ward, a total of 50 households were selected randomly as respondents, making a total of 100 in the study area. Structured questionnaire were served to the respondents in addition to oral interviews and group discussion in order to source data.

Methods of Data Analysis

Descriptive statistics such as frequency distribution, percentages, mean and tabulation of findings were made in order to achieve the objectives of the study.

RESULTS AND DISCUSSION

Table 1: Sources of Water Supply in the Study Area.

Source of Water	Wards			
	Wuro-Modibbo		Lakare	
	Freq.	%	Freq.	%
Streams	12	24.0	08	16.0
Well-water	26	52.0	30	60.0
Borehole	08	16.0	03	6.0
Tap-water	02	4.0	05	10.0
River and dam	02	4.0	04	8.0
Total	50	100.0	50	100.0

Source: Field survey data (2018/2019).

Table 1 shows findings on sources of water supply in the study area. It could be seen that five main sources were reported namely, streams, well-water, borehole, tap-water and river and dams. Of these sources, the majority (60.0%) of the households in Lakare ward got their water from the well-water. Similarly, about 52.0% of the residents in Wuro-Modibbo Ward had their water supply from well-water. This was followed by stream sources with 24.0% and 16.0% of households from Wuro-Modibbo and Lakare wards, respectively, accessing their water supply. The implication of this finding is that a larger chunk of residents in the study area did not have access to safe water, but rather relied heavily on water obtained from ground aquifer, where substantial amount is harvested through open dug wells which extend few meters in depth. These findings are at variance with the ILO (2019) report which depicted a pivot role for water in the rural settings. In communities where safe water are provided, the document had that water plays a central function in ensuring a sustainable, equitable and productive rural economy. This is in addition to the complementary use in agricultural practices and minimisation of tendencies of disease outbreaks by up to 40.00%. Further, safe or portable water availability opens or creates several opportunities for employment within the stipulated domains.

Table 2: Methods by which People Convey Water to Their Houses

Method of Conveying Water	Wards			
	Wuro-Modibbo		Lakare	
	Freq.	%	Freq.	%
Motorcycle	03	6.0	06	12.0
Bicycle	04	8.0	10	20.0
Head/Hand	26	52.0	27	54.0
Cart (*Kura*)	17	34.0	07	14.0
Total	50	100.0	50	100.0

Source: Field survey data (2018/2019).

Findings on methods by which people convey water to their houses are shown in Table 2. The results revealed that the majority of the residents in Wuro-Modibbo and Lakare wards accounted for those who used head/hand in conveying water to their houses, with 52.0% and 54.0%, respectively. The use of carts was second most dominant in the area with 34.0% and 14.0% for the Wuro-Modibbo and Lakare wards, respectively. Residents that employed bicycles and motorcycles to transport water to their houses accounted for the minority. This implied that individuals in the area of study still used manual means to supply their houses with water, which is strenuous.

Table 3: Frequency of Water Supply from Pipe-Borne Water in the Area.

Frequency of Supply	Wards			
	Wuro-Modibbo		Lakare	
	Freq.	%	Freq.	%
Daily	09	18.0	-	-
Once a week	27	54.0	19	38.0
Twice a week	09	18.0	09	18.0
Not obtainable	05	10.0	22	44.0
Total	50	100.0	50	100.0

Source: Field survey data (2018/2019)

The frequency of water supply from the pipe-borne source is captured in Table 3. Based on the findings, the majority of the residents (54.0%) in Wuro-Modibbo ward had water supply from their taps only once a week. But those that had water supply twice a week and daily were 18.0% each. However, a larger proportion (44.0%) of residents in the Lakare ward accounted for those who had no water supply from their tap at all. Households that had water supply from their taps only once a week recorded 38.0%. What this means is that there is an extreme scarcity of pipe-borne water in the study area, where it is indicated that the highest number of the respondents only obtained pipe-borne water once a week, while some of the respondents did not have access to water supply and so they depend on other alternative sources.

Table 4: Status of Water Availability in the Study Area.

Response	Wards			
	Wuro-Modibbo		Lakare	
	Freq.	%	Freq.	%
Yes	11	22.0	24.0	48.0
No	39	78.0	26.0	52.0
Total	50	100.0	50.0	100.0

Source: Field survey data (2018/2019).

Table 4 indicates residents' responses with regard to water supply statuses in Yola-South LGA. The results revealed that most of the households (78.0%) in Wuro-Modibbo had no water available both in terms of surface and sub-surface throughout the year. Similarly, 52.0% of the respondents in the Lakare ward claimed unavailability of water within the stipulated period. Only a few were said to gained access to water in the entire study area. All these explain the status of water scarcity in the LGA, as most of the water sources were insufficient. This further confirmed Sekyere *et al.* (2020) report that most countries worldwide, especially in the developing nations, had severe shortage of safe water supply in their domains. This report is further buttressed by Salom and Khumalo (2022)'s findings which as a matter of urgency in most parts of Namibia embarked on massive provision of water supply points in most communities in the country to ensure the availability and sustainability of same.

Table 5: Time Spent in Fetching Water from the Sources in the Area.

Duration of Fetching Water	Wards			
	Wuro-Modibbo		Lakare	
	Freq.	%	Freq.	%
Ten minutes	13	26.0	18	36.0
Fifteen minutes	08	16.0	14	28.0
Half an hour	20	40.0	16	32.0
An hour	07	14.0	01	2.0
More than an hour	02	4.0	01	2.0
Total	50	100.0	50	100.0

Source: Field survey data (2018/2019).

The duration taken to fetch water by members of households in the LGA is documented in Table 5. A larger proportion (40.0%) of the residents spent not less than half an hour to fetch water for residential use in the Wuro-Modibbo ward. Another 26.0% had to spend 10 minutes only to obtain water for domestic and other uses in the ward. Similar results were obtained in Lakare ward, with 36.0% of those residents spending 10 minutes fetching water for their uses. In addition, 32.0% spent at least half an hour before obtaining water for their residential uses. Pooling from these findings by implication, it could be stated that the majority (72.0%) of the population in both wards had to spend at least half an hour to obtain water for their uses. In other words, water scarcity is pronounced in the LGA, indicating the severe difficulty and lack of sustainability of water supply generally in the wards. Nwankwoala (2011) maintained that minimising hours of fetching water would help individuals save time for use in other productive ventures, and by extension generate income and/or some community-building services. On the part of the government, provision of essential services like water supply should be made in collaboration with members of the benefiting communities so that they agree on appropriate positions of citing same in order to save the time of obtaining the precious commodity.

Table 6: Uses to Which Water Was Put in the Study Area.

Uses of Water	Wards			
	Wuro-Modibbo		Lakare	
	Freq.	%	Freq.	%
Building purposes	01	2.0	-	-
Commercial purposes	10	20.0	02	4.0
Domestic chores	39	78.0	48	96.0
Total	50	100.0	50	100.0

Source: Field survey data (2018/2019).

The uses to which water was put in the LGA are documented in Table 6. Three main uses were recorded. Of these uses, 78.0% of the residents in Wuro-Modibbo ward used water for domestic chores like cooking, washing clothes, bathing, drinking and general sanitation. The utilisation of water for commercial purposes by the households in the area is followed by 20.0%, while only a meagre 2.0% used water for building needs at the time of this report. This implied that in spite of the increasing rate of population in the domain, there hadn't been a commiserate increase in building constructions to accommodate this added populace in the society. This further tells of the anticipated degeneration of the environment in the area. The development in this LGA is in consonance with Dominguez *et al*. (2019) assertion that the system of supply of water in the rural areas of developing economies has peculiarities that are tandem with deficiencies that hamper sustainability.

Table 7: Government and Community Support in the Area of Water Supply.

Type of Support	Wards			
	Wuro-Modibbo		Lakare	
	Freq.	%	Freq.	%
Community assistance (well)	09	18.0	03	6.0
Government assistance (borehole)	26	52.0	16	32.0
No assistance (efforts)	15	30.0	31	62.0
Total	50	100.0	50	100.0

Source: Field survey data (2018/2019).

Government and community participation in rural and urban development is a civic responsibility that is being rated high in any society advancement purposes. As Akpor and Muchie (2011) reported, water is essential to all and sundry regardless of the race, religion,

background or any affiliation, and therefore, should become foremost as priority of both the public and private sectors. These interventions are shown in Table 7. In the Wuro-Modibbo ward, 52.0% of the households claimed government interventions, whereas 18.0% indicated community assistance in the area in terms of provision of boreholes. However, most of these amenities were not functioning at the time of this survey. But in the Lakare ward, 62.0% of the residents claimed no assistance either from the government or community in terms of water supply, with 32.0% reporting no assistance from the government and only 6.0% said of community intervention. It could be deduced from the findings of this study that although the government had made efforts through the provision of dug well-water and the establishment of some boreholes in some identified spots, there was grossly inadequate community participation to encourage sustainability. This phenomenon is evidenced by the rate of break-down of these facilities in the area. This community involvement or participation is a scenario that has been encouraged by Machado *et al.* (2019) whose findings in Brazil endorsed such practice if sustainability should be maintained. A similar study by Hove recommended such practices for African countries.

CONCLUSION

Concluding from the findings of this study, although there were four sources of water supply in the area of study, the major source for residents studied was the well-water, with head/hand as the dominant method of conveying water to their houses. Most of the residents obtained water from the available taps twice a week which was grossly inadequate. Also, there was severe water scarcity throughout the year in the area, with most community members spending not less than an hour to obtain water at all times. And a larger chunk of these households used water obtained for domestic chores. The government and community interventions were minimal, and where it occurred there was no culture of sustainability as most water facilities were non-functional. Based on the aforementioned, it is strongly recommended that the government and members of the communities should establish a collaborative effort in executing community projects so as to establish participatory efforts by residents which accord them a sense of belonging thereby leading to a culture of sustainability among the beneficiaries. By this means, the lifespan of community projects will last long.

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