Distribution and Access to Public Pipe-Borne Water in Urban Areas of West Africa: A Case of Ilorin-West Local Government Area, Nigeria

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Abstract

Against the backdrop of the high rate of water scarcity in urban areas of developing countries and the achievement of SDG 6, this study evaluates the distribution and access to public pipe-borne water in Ilorin West Local Government Area, Nigeria. Coordinates of public water points in the area were obtained with the handheld Global Positioning System's device and mapped in the ArcGIS10.1 environment. To appraise residents' satisfaction with the public water supply, one hundred and forty-six questionnaires were systematically administered to residents of the area. The obtained data were subjected to spatial and descriptive analysis. Nearest neighbour analysis was used to evaluate the distribution of water points in the area. There are 146 public pipe-borne water points in Ilorin West Local Government Area, distributed randomly (with NNR=1.2) without cognizance of the distribution of housing units. Consequently, residents are, among others, exposed to a reduction in productivity and loss of business opportunities. The study, among others, suggested the formulation and implementation of a house-to-point policy in the study area.

Keywords: Water, Urban Health, Sanitation, Developing countries

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Received on January 7th, 2023/Accepted on June 8th, 2023

Introduction

Water is an important natural resource for the support and sustenance of man (Walton, 1970). Its availability and quality has profound and continuing implications both for general health and well-being. Unfortunately, not less than two-thirds of the population of the global south draws untreated water from different polluted and unreliable sources (Adebayo, 2007). About 159 million people depend on water from surface sources like rivers and 423 million take water from unprotected springs that are linked to transmission of water-related diseases (Annually, 4 billion cases of water-related diseases cause 3.4 million deaths worldwide, which is a leading cause of deaths especially in children under 5 years who die of water-related diseases (World Bank, 2015). Yet, as the global population and per capita use increase due to lifestyle changes, the demand for water increases. Conversely, poverty, war, pollution and climate change, among others, have led to a continuous decrease in access to potable water.

In the year 2018, about 3.6 billion people (47%) of the global population lived in areas with water scarcity at least once a month (UN-Water, & United Nations World Water Assessment Programme, 2018). It is projected that by 2050, with about a 22 – 37% increase in the global population, there will be an acute shortage of water – with a dire situation to be witnessed in Africa and Asia (Burek et al., 2016). In Africa, water scarcity affects 1 in 3 people and this is getting worse with population growth, urbanization and increases in household and industrial uses (World Health Organisation, 2022). A study conducted by Brookings (2022) reveals that about 400 million people in the continent do not have access to water while almost 40% of the 783 million people in Sub-Saharan Africa lack access to an improved source of drinking water (Brookings, 2022).

Informed by sharp socioeconomic and geographical inequalities, the urban poor are disproportionately affected by water shortages in the continent. In Nigeria, there has been reports of water shortage in many urban and semi-urban areas (Federal Republic of Nigeria -FRN, 2000; Adebayo, 2007). Out of the 85 million people living in urban and semi-urban areas in Nigeria in the year 2020, less than half have reasonable access to reliable water supply (FRN, 2000), while in the year 2021, about 60 million Nigerians do not have access to water (Reliefweb, 2021). To meet water demand, households depend on individual water provision through boreholes and informal alternatives from street vendors. The growing rate of household dependence on these alternatives points to a gap in achieving the original intention of establishing water corporations and public water systems across major cities in Nigeria. It also questions the ability of the country to achieve Target 6:1 (universal and equitable access to safe and affordable drinking water for all) of the Sustainable Development Goals (SDGs) by 2030.

The public water system is a traditional method of justifying water as a social good in Nigeria. To this end, Nigerian state governments in collaboration with local governments have, through the provision of public pipe-borne water, exemplified that water provision is fundamental. However, government transition and its associated policy changes in the country have led to varying interventions in water provision. These coupled with the increasing urban population have escalated the water provision challenge, particularly in Nigeria's urban areas, Ilorin West Local Government Area being no exception. Ilorin West Local Government area is characterized by a mixed population, the majority of which are poor. The local government area is dotted with public pipe-borne water but the challenge of water and its associated pains have been reported. How the spatial distribution and access to water in urban space affect the socio-economic development of the area is the crux of this paper.

Access to Urban Water in Africa

Different researchers have reported the challenges of access to public water in urban centres of Africa. The pain, cost and challenges of water inadequacy and poor access to pipe-borne water in Ghana and Kenya are documented by Peloso and Morinville (2014) and Kennedy (2006) respectively. In Nigeria, water scarcity and poor access have also been documented (Krebbs, 2010). For example, in Makurdi, Benue State, Chia et.al. (2014) reported that the increasing population had caused serious water stress, and that, areas closer to the metropolitan water board had more water supply than those areas that are farther away. Despite the plethora of research attempts in this direction, there exists a gap in spatially documenting pipe-borne water facilities in these urban areas. Previous discussions have been clouded with the impression that access is only limited to the availability of water-related facilities within a specific limit (Bankole, 2010).

Attempt to address the gap identified above by Njoku et. al., (2017) in their study "evaluation of domestic access to pipe-borne water in Calabar Metropolis, Southern Nigeria" was also fraught with the challenge of limiting the study to mapping without its connection to the non–spatial socio-environmental issues such as implications for urban health, attitude and economic costs among others. The persistence of the challenge of piecemeal assessment of access to pipe-borne water has led to the failure of policy recommendations directed towards addressing water challenges in several urban areas.

The protracted challenge of access to pipe-borne water in urban areas is of great concern for many reasons. First, urban areas in Africa are dominated by the larger urban poor who live both in the core and fringes of urban centres (Shidhart et al., 2007). The inability of these individuals to access water may subject the urban areas to health risks. For instance, Afolabi (2010) reported that the majority of the residents of Akure depend on other sources of water supply other than pipe-borne water which is unsafe for public consumption due to the poor and outdated network of existing pipelines. Secondly, urban economy, security and perception of the right to these urban areas are strongly connected to access to basic needs including food, housing and water. Africa's population is prone to endemic diseases yet with weak health infrastructure and systems. In the study area, the scenario is not any better.

There is little or no record of evaluating public pipe-borne water in any area of Kwara State. An attempt by Ibrahim et al. (2018) in this direction was unable to connect the implication of residents' access to water to urban health. Hence, previous research in the study area, although complete in its own right, has not holistically considered the challenges of water. This paper addresses these gaps by mapping the distribution of pipe-borne water in the study area and connecting it with its implication for sanitation and urban health.

Study Area and methods

Ilorin, the capital of Kwara State, is a pre-modern town and one of the major Yoruba towns in the former northern region of Nigeria. Although Ilorin metropolitan area covers three (3) Local Government Areas which are Ilorin West, Ilorin East and Ilorin South, Ilorin West is the administrative seat of Kwara State. The Local Government Area is very accessible because one of the major highways and the only railway line between South–Western and the Northern parts of Nigeria passed through it. This characteristic of the area and its infrastructural advantage derived from being a component of the metropolis has favoured her population-featured urbanization and its associated increase in demand for water. Ilorin West Local Government Area, the administrative headquarters of Kwara State, is one of the fast-urbanizing areas in Nigeria. It is characterized by a mixed population, the majority of which are poor. The local government area is dotted with public pipe-borne water but the challenge of water and its associated pains have been reported.

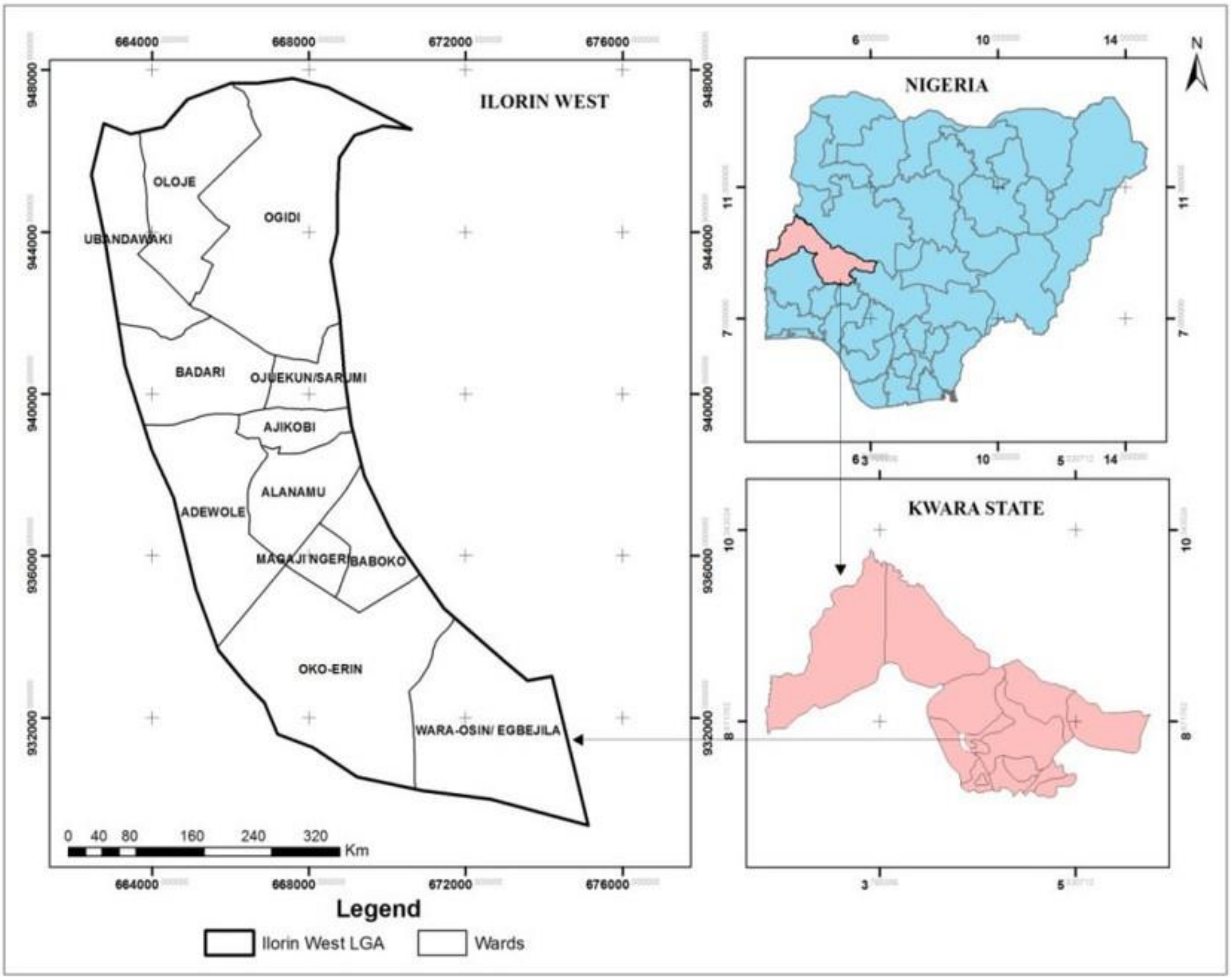

Figure 1: Ilorin West Local Government Area within the context of Kwara State Source: GIS Laboratory, Osun State University, 2022

Methodology

The data for this study are based on primary and secondary data. The primary data utilised for the study are coordinates of the pipe-borne water, information on the demand and supply of water to residents, alternative sources of water supply and, socio-economic and environmental challenges of lack of access to water in the study area.

An inventory of the boreholes in the study area has also been undertaken. The coordinates of these pipe-borne water points were collected using handheld GPS, mapped in the ArcGIS10.1 environment. Aerial imagery of the study area was downloaded using google earth pro to guide the mapping of the water points. The imagery was exported to the ArcGIS environment where it is digitised and georeferenced. In addition, the coordinates of water points were inputted into the notepad and saved as text (txt). The text file was imported into the ArcGIS environment and converted to shape files (shp.). The shape files were overlaid on the map from which the Nearest Neighbour analysis of the pipe-borne water was calculated.

The functionality of the pipe-borne water is assessed using direct observations. To appraise residents' satisfaction with the pipe-borne water, among others, questionnaires were administered to one hundred and forty-six respondents selected from the 11 political wards in the Local Government Area using a multistage sampling technique (Table 1). To sample the respondents, the total population in each ward was deduced from the 2006 Nigeria population census record. This was projected to the year 2022 using the projected population rate of 3.8. After projection, a sample size of 0.03 was utilised. This is in tandem with previous social research in this area of study (Olanrewaju, 2021). Having decided on the sample size, questionnaires are administered to randomly selected respondents from each ward. Some interviews are also conducted with staff of the Kwara State Water Cooperation (KSWC) to evaluate their operation and challenges with water provision in the area. A similar interview conducted with community leaders in the local government area obtained data hat was subjected to spatial and descriptive analysis. Nearest neighbour analysis was used to evaluate the distribution of water points in the area. Percentages were utilised to summarise the data.

Table 1: Number of questionnaires administered in the wards

S/N	WARD	2006 POPULATION	2022 PROJECTED POPULATION at the rate of 3.8	0.03% SAMPLE SIZE
1	AJIKOBI	15158	41493	12
2	ALAAMU	13247	36262	10
3	BABOKO	19178	52497	15
4	WARRAH OSIN/EGBEJILA	18382	50318	15
5	MAGARI NGERI	13938	38148	11
6	BADARI	16157	44227	13
7	OJUEKUN/SARUMI	15050	41197	12
8	UBANDAWAKI	12376	33877	10
9	ADEWOLE	10438	28572	8
10	OLOJE	16157	44227	13
11	OGIDI WEST	22356	61196	18
12	OKO-ERIN	11276	30866	9
	TOTAL	183711	502880	146

Source: National Population Commission, 2006 and Authors' Computation, 2022

Results: Water distribution, access and productivity

This section presents the findings of the study. It is broadly divided into three parts, tailored towards addressing the objectives of the study.

Spatial Distribution of Pipe-Borne Water in Ilorin

As of the time of this study, there were 146 public pipe-borne water points in Ilorin West Local Government Area. The highest incidence of pipe-borne points is observed in Ogidi ward (18 points) while the lowest is observed in Adewole ward (8 points) (Table 2 and Table 3). With a population of about five hundred thousand individuals, the number of existing pipe-borne points are few to effectively serve the residents of the local government. The Nearest Neighbour Index of 1.0, as revealed in Table 4, indicates that the location of the water points is random, hence, little or no cognizance was given to the distribution of housing units in the area. Although, physical observation informs that some of these points are located in the neighbourhood and central areas. About 70% of the respondents reveal that they trek for almost 10 minutes before they can access pipe-borne water (Table 5). The randomness of water points and expansion of urban areas were, in part, responsible for the observed distance between residents and the location of pipe-borne water distribution in the metropolis.

Only 20.4% of the water points are functional while about 19% are partially functioning and about 61% are non-functional (Table 3). Physical observation of the water points reveals that nearly all the non-functional and partially functional taps have a mechanical fault. Some of the observed mechanical faults include blockage of pipes, rusting of pipes, faulty liners and lids, loose bolts and nuts, and weakened valves and water mains. Some of the functional taps were also seen to be leaking at joints, hence supplying water poorly. Although the quality of water from these taps was not assessed, however, gathering residents around the water, and dropping sweat and saliva during conversations can aid in the transmission of various diseases. The poor state of some functioning taps creates the impression that in the absence of timely maintenance, the taps will soon become non-functional.

Some of the community leaders while admitting the need to repair the taps of the boreholes, complained of the paucity of funds in the community. A lack of prompt response by KSWC is also noted. The intervention of stakeholders (Government, Non- Governmental Organisations and Community) in the management of the public pipe water systems in the area were, therefore, assessed. Not less than 80% of the repairs and other maintenance of the water was carried out by the community. However, in many cases, technical support was given by government officials.

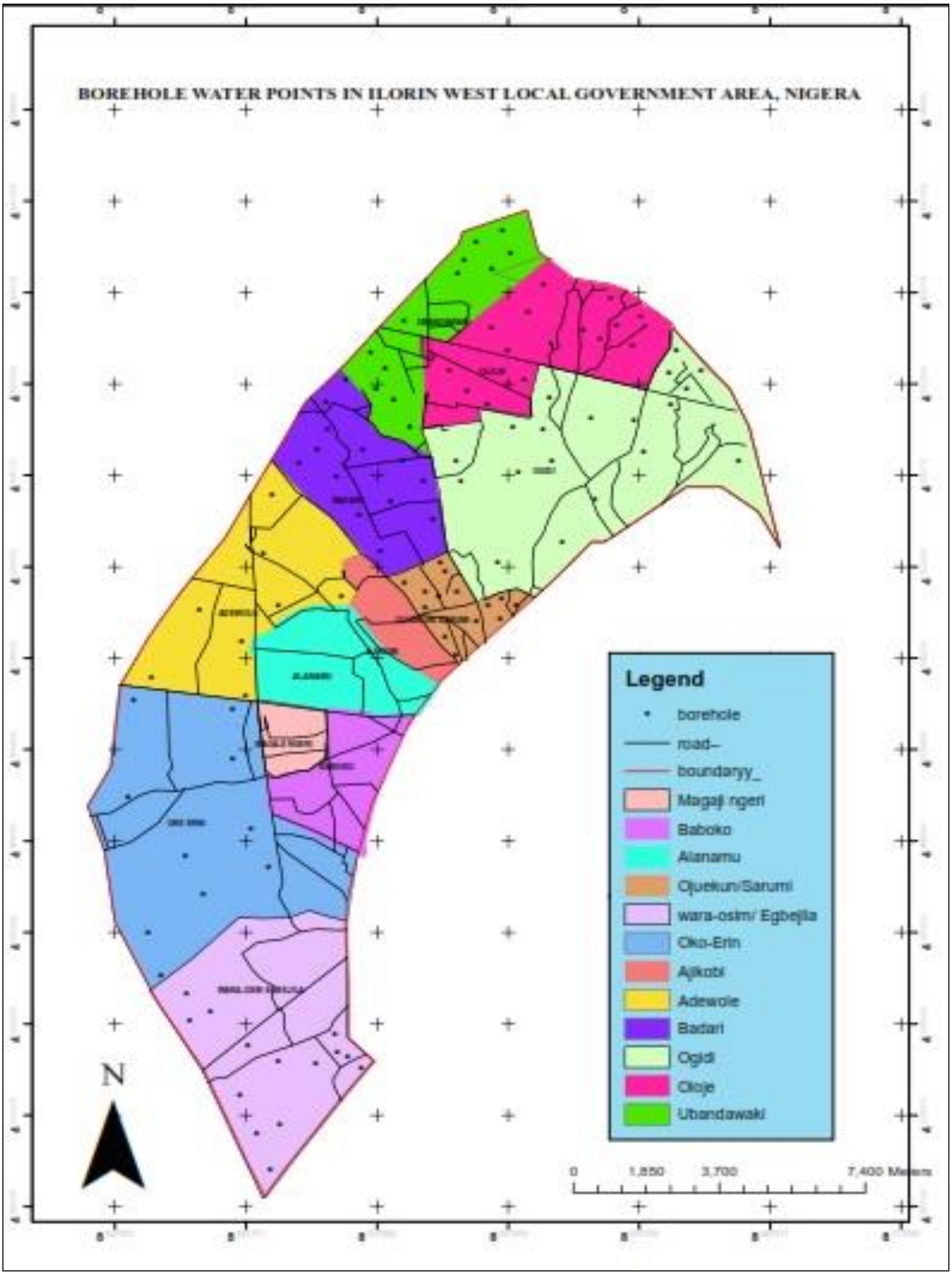

Figure 2: Distribution of Pipe Borne Water Points in IWLGA Source: Author's work, 2022

Table 2A: Coordinates of Public Pipe Borne Water Points in Ilorin West

AREA	POINTS	COORDINATE(X)	COORDINATE(Y)
BADARI	POINT A	8˚35’24.682”E	4˚35’55.123”N
BADARI	POINT B	8˚35’8.669”E	4˚35’35.834”N
BADARI	POINT C	8˚35’9.397”E	4˚35’11.451”N
BADARI	POINT D	8˚35’1.391”E	4˚34’55.074”N
BADARI	POINT E	8˚34’45.742”E	4˚34’43.429”N
BADARI	POINT F	8˚35’16.676”E	4˚34’31.783”N
BADARI	POINT G	8˚35’38.148”E	4˚34’54.711”N
BADARI	POINT H	8˚36’10.901”E	4˚34’45.248”N
BADARI	POINT I	8˚36’27.642”E	4˚34’26.688”N
BADARI	POINT J	8˚36’1.608”E	4˚34’9.071”N
BADARI	POINT K	8˚35’35.036”E	4˚33’57.059”N
BADARI	POINT L	8˚35’53.236”E	4˚33’26.119”N
BADARI	POINT M	8˚36’37.423”E	4˚33’54.399”N
OJUEKUN	POINT A	8˚36’13.154”E	4˚32’58.165”N
OJUEKUN	POINT B	8˚36’42.005”E	4˚33’16.554”E
OJUEKUN	POINT C	8˚36’46.127”E	4˚33’8.944”N
OJUEKUN	POINT D	8˚36’55.639”E	4˚32’49.604”N
OJUEKUN	POINT E	8˚36’40.42”E	4˚32’46.117”N
OJUEKUN	POINT F	8˚36’30.275”E	4˚32’50.239”N
OJUEKUN	POINT G	8˚36’30.275”E	4˚32’35.337”N
OJUEKUN	POINT H	8˚36’45.493”E	4˚32’11.242”N
OJUEKUN	POINT I	8˚36’54.37”E	4˚31’55.389”N
OJUEKUN	POINT J	8˚37’12.125”E	4˚32’25.509”N
OJUEKUN	POINT K	8˚37’21.636”E	4˚32’39.142”N
OJUEKUN	POINT L	8˚37’32.733”E	4˚32’44.215”N
OJUEKUN	POINT M	8˚37’44.781”E	4˚32’38.825”N
OJUEKUN	POINT N	8˚37’31.782”E	4˚32’26.46”N
UBANDAWAKI	POINT A	8˚37’11.724”E	4˚37’55.366”N
UBANDAWAKI	POINT B	8˚37’33.289”E	4˚38’4.647”N
UBANDAWAKI	POINT C	8˚37’40.66”E	4˚37’44.992”N
UBANDAWAKI	POINT D	8˚37’25.373”E	4˚37’31.616”N
UBANDAWAKI	POINT E	8˚37’2.442”E	4˚37’38.986”N
UBANDAWAKI	POINT F	8˚36’56.709”E	4˚37’27.521”N
UBANDAWAKI	POINT G	8˚36’13.305”E	4˚36’46.573”N
UBANDAWAKI	POINT H	8˚35’45.733”E	4˚36’18.729”N
UBANDAWAKI	POINT I	8˚35’57.199”E	4˚36’3.715”N
UBANDAWAKI	POINT J	8˚35’50.042”E	4˚35’47.15”N
UBANDAWAKI	POINT K	8˚36’4.526”E	4˚35’36.545”N
UBANDAWAKI	POINT L	8˚36’17.717”E	4˚35’14.56”N
ADEWOLE	POINT A	8˚34’24.055”E	4˚34’14.531”N
ADEWOLE	POINT B	8˚34’17.139”E	4˚33’24.663”N
ADEWOLE	POINT C	8˚33’24.358”E	4˚33’35.158”N
ADEWOLE	POINT D	8˚32’44.682”E	4˚31’35.098”N
ADEWOLE	POINT E	8˚34’2.215”E	4˚31’18.718”N

Table 2B: Coordinates of Public Pipe Borne Water Points in Ilorin West

ADEWOLE	POINT F	8°33’58.939”E	4°32’6.766”N
ADEWOLE	POINT G	8°34’28.059”E	4°32’38.434”N
ADEWOLE	POINT H	8°35’20.839”E	4°32’47.17”N
OGIDI	POINT A	8°40’47.546”E	4°34’43.385”N
OGIDI	POINT B	8°39’29.372”E	4°34’51.425”N
OGIDI	POINT C	8°38’49.168”E	4°34’9.882”N
OGIDI	POINT D	8°38’21.919”E	4°33’34.592”N
OGIDI	POINT E	8°39’29.654”E	4°33’15.383”N
OGIDI	POINT F	8°38’13.431”E	4°34’44.725”N
OGIDI	POINT G	8°37’46.629”E	4°34’34.004”N
OGIDI	POINT H	8°36’57.938”E	4°34’27.303”N
OGIDI	POINT I	8°36’54.364”E	4°34’45.618”N
OGIDI	POINT J	8°37’40.822”E	4°35’13.314”N
OGIDI	POINT K	8°38’6.731”E	4°35’11.527”N
OGIDI	POINT L	8°38’11.645”E	4°35’39.223”N
OGIDI	POINT M	8°38’46.488”E	4°35’20.908”N
OGIDI	POINT N	8°39’21.778”E	4°35’20.461”N
OGIDI	POINT O	8°39’51.26”E	4°35’32.969”N
OGIDI	POINT P	8°40’4.662”E	4°35’48.157”N
OGIDI	POINT Q	8°40’15.829”E	4°36’2.005”N
OGIDI	POINT R	8°39’50.814”E	4°35’59.772”N
OGIDI	POINT S	8°39’55.727”E	4°36’19.427”N
WARA-OSIN EGBEJILA	POINT A	8°34’8.35”E	4°24’26.376”N
WARA-OSIN EGBEJILA	POINT B	8°34’10.73”E	4°24’57.734”N
WARA-OSIN EGBEJILA	POINT C	8°34’30.856”E	4°25’6.159”N
WARA-OSIN EGBEJILA	POINT D	8°33’58.093”E	4°25’30.965”N
WARA-OSIN EGBEJILA	POINT E	8°33’16.438”E	4°26’37.426”N
WARA-OSIN EGBEJILA	POINT F	8°33’14.566”E	4°26’59.424”N
WARA-OSIN EGBEJILA	POINT G	8°33’30.011”E	4°26’43.511”N
WARA-OSIN EGBEJILA	POINT H	8°34’3.242”E	4°26’15.897”N
WARA-OSIN EGBEJILA	POINT I	8°34’28.984”E	4°26’0.451”N
WARA-OSIN EGBEJILA	POINT J	8°34’58.47”E	4°25’59.047”N
WARA-OSIN EGBEJILA	POINT K	8°35’15.763”E	4°26’25.299”N
WARA-OSIN EGBEJILA	POINT L	8°35’18.22”E	4°26’10.147”N
WARA-OSIN EGBEJILA	POINT M	8°35’26.41”E	4°26’4.413”N
WARA-OSIN EGBEJILA	POINT N	8°35’37.467”E	4°25’54.585”N
OLOJE	POINT A	8°38’6.732”E	4°37’17.762”N
OLOJE	POINT B	8°37’54.611”E	4°36’54.83”N
OLOJE	POINT C	8°37’24.473”E	4°36’40.416”N
OLOJE	POINT D	8°37’38.232”E	4°36’21.415”N
OLOJE	POINT E	8°36’49.42”E	4°36’3.398”N
OLOJE	POINT F	8°37’4.162”E	4°35’44.725”N
OLOJE	POINT G	8°37’21.524”E	4°35’34.569”N
OLOJE	POINT H	8°37’51.663”E	4°35’55.863”N
OLOJE	POINT I	8°38’39.82”E	4°36’39.433”N

Table 2C: Coordinates of Public Pipe Borne Water Points in Ilorin West

OLOJE	POINT J	8˚38’53.251”E	4˚36’30.916”N
OLOJE	POINT K	8˚39’1.768”E	4˚37’4.658”N
OLOJE	POINT L	8˚39’7.01”E	4˚36’42.054”N
OLOJE	POINT M	8˚39’20.441”E	4˚36’24.691”N
OLOJE	POINT N	8˚39’20.114”E	4˚36’24.691”N
OKE-ERIN	POINT A	8˚32’53.464”E	4˚27’15.531”N
OKE-ERIN	POINT B	8˚32’41.881”E	4˚27’54.492”N
OKE-ERIN	POINT C	8˚33’27.16”E	4˚28’27.487”N
OKE-ERIN	POINT D	8˚34’21.566”E	4˚28’50.302”N
OKE-ERIN	POINT E	8˚34’7.525”E	4˚29’23.647”N
OKE-ERIN	POINT F	8˚33’12.418”E	4˚29’1.183”N
OKE-ERIN	POINT G	8˚32’26.437”E	4˚29’52.78”N
OKE-ERIN	POINT H	8˚33’52.783”E	4˚30’25.424”N
OKE-ERIN	POINT I	8˚33’51.379”E	4˚31’8.246”N
OKE-ERIN	POINT J	8˚32’31.”E	4˚31’17.021”N

Source: Authors work, 2022

Table 3: Number of Pipe Borne Water Supply Systems

Political wards	Number of pipe-borne water collection points			Total
	Functioning	Partially functioning	Not functioning	
Ajikobi	3	2	7	12
Warrahosin	2	4	8	14
Ubandawaki	3	0	7	10
Adewole	3	0	5	8
Oloje	3	3	7	13
Ogidi west	1	5	12	18
Magarinigeri	5	4	2	11
Alaamu	3	0	7	10
Badari	4	0	9	13
Ojuekun	1	2	10	13
Baboko	0	2	13	15
Okoerin	2	5	2	9
TOTAL	30	27	89	146
Percentage	20.54	18.49	60.95	100

Source: Author’s work, 2022

Table 4: Nearest Neighbour Summary

Observed Mean Distance	0.007 Kilometers
Expected Mean Distance	0.0069 Kilometers
Nearest Neighbour Ratio	1.005957
z-score	0.116226
p-value	0.907473

Source: Authors work, 2022

Table 5: Distance Travelled to access Pipe-borne water

Distance	Percentage
0 – 2 minutes	5.2
3 – 5 minutes	9.0
6 – 9 minutes	15.4
10 minutes and above	70.4

Source: Author's work, 2022

Water Demand and Supply in Ilorin West Local Government Area (ILWGA)

As disclosed by some of the respondents and summarised in Table 6, the average daily water demand of each household in ILWGA is 500 litres. Nevertheless, during the dry season, the household water demand increases to as high as 1000 litres. The recorded water demand is for a single-unit family comprising four (4) individuals. For households that are more than 4 individuals, an average of 100 litres is required for an additional person. Also, for families that have an infant/child between the ages of 0-5 years, the average daily water demand increases slightly to about 750 litres. Meanwhile, some respondents revealed that they can only access an average of 300 litres of water from the boreholes weekly (Table 6). The data show that the volume of water supply is usually reduced during the dry season. KSWC supplies water twice a week while it rarely supplies water thrice a week. Water is supplied between the hours of 6am to 9am and about the same time in the evening. From the foregoing, there is a water shortage in the local government area, and this is rife during the dry season – where, unfortunately, more water is demanded. Out of every 10 interviewed respondents in the study area, seven have not had their water demand met in the last 5 years.

As a result of the shortage of water triggered by the failure of the public pipe-borne water, about 61% of the respondent's resort to the use of water drawn from hand-dug wells, about 20% purchased water from informal water vendors, and almost 18% use water sourced from taps (both community and privately owned) (Table 7). Seasonality (100%), contamination (55%), and stress of fetching (80%) are the major challenges experienced by users of well water. During the dry season, residents reveal that some of the wells dry up, hence, increasing water hardship. In response, some of the residents fetch water early in the morning or late at night. In some cases, some of the residents stay in long queues to fetch water at these wells. During the water scarcity period, some landlords prevent community members from fetching water while others lock up their wells.

Another worrisome situation associated with well water in the area is the condition of the wells that residents consider as an alternative to public pipe-borne water. Some of the wells, owing to poor management, are not covered and for that matter, are exposed to different types of contamination. Using fetchers from different sources further exposes the water to contaminants. Unfortunately, less than 10% of the respondents treat water from these sources.

Table 6: Water Demand in the study area

Family Size	Water Demand	Water Demand during Harmattan
Single Family (0-4 persons)	500	1000
Single Family (5 -7 persons)	800	1300

Source: Author's work, 2022

Table 7: Alternative source of water in the study area

Source	Frequency	Percent
Dug well	89	61.5
Water vending	29	20
Borehole	27	18.5
River/Stream	0	0
Total	146	100.0

Source: Author's work, 2022

Plate 1: Non-Functional Public Pipe-Borne Water in Ubanda waki Ward of IWLGA.

Source: Author's work, 2022

Plate 2: A Dug well in Adewole Ward, IWLGA.

Source: Author's work, 2022

Socio-Economic and Environmental Challenges of Access to Water in IWLGA

The metropolitan area is a youthful society as about 32% of the respondents are between the age range of 26 – 35 years and about 37% are between the ages of 36-45 years (Table 8). As a youthful society, residents are of childbearing age with not less than 80% of the residents having at least a child.

These characteristics of the residents make them heavily subjected to the hardship associated with the erratic pipe-borne water and poor access in the area. Some of the social challenges associated with this include stealing water kegs and containers, and theft of water. Fights and other social vices which arise from long queues were also reported.

About 28% of the residents carried out water-dependent businesses. These businesses include food processing and local agricultural product processing. Owing to the poor access to water, these residents are exposed to a reduction in production, increased production time, loss of business opportunities, loss of revenue – due to the cost of water, and loss of products due to spoilage. About 70% of the residents of the local government area complained of lateness to work, tiredness and others. The immediate environmental challenge of water challenge in the area is sanitation and poor hygiene. This is, as about 60% of the residents revealed, adjustments in this respect. Management of water has made about 80% of the residents adjust their lifestyle which includes reduction of water for bathing and other sanitary activities, reduction of the daily bathing period, reduction of mopping, use and reuse of clothes, reduced use of water closet, iterant stooling and defecation in the bushes or open air, poor processing of fruits and foods, etc.

Not less than 80% of the residents have been treated with water and sanitation-related diseases in the last 6 months. Some of the water and sanitation-related diseases that are rampant in the area are Typhoid (96%), dysentery (80%), Skin Irritation (53.1%), and Cholera (40%). Unfortunately, the worst hit is married women and children. The former faces the socio-psychological challenges of lack of access to water while both of them are directly affected by it. Meanwhile, about 65% of the respondents reported that they were not able to visit health facilities due to the high cost of hospital bills. Although, urban, about 30% of the sampled respondents earn between ₦11, 000- ₦20, 000 monthly (amounting to about $250 US Dollars) while almost 21% earn between ₦21, 000 – ₦30, 000. Only a few, about 5%, earn above ₦41, 000 monthly (the equivalent of 80 US Dollars). The economic situation of the residents makes them helpless in the management of the water crisis in the local government area.

Table 8: Socioeconomic Characteristics of Respondents

Characteristics	Variables	Percentage
Age of Respondents	18 - 25 years	19.3%
	26 -35 years	32.4%
	36 -45 years	37.1%
	46 years and above	11.2%
	Total	100
Number of Children	No child	15.9%
	At least one child	84.1%
	Total	100%
Type of Business	Water Dependent	28.5%
	Non-Water Dependent	71.5%
	Total	100%

Source: Author’s work, 2022

Implication and Concerns for Healthy Cities in Africa

Nigeria is a major country in Africa. It currently hosts about 25% of African cities, including Lagos, Port Harcourt, Kano, Ibadan and Ilorin. By the year 2050, with the current urbanization trend of the country, the number of her urban areas would have increased, thereby, massively contributing to Africa’s urbanization. The population of cities in Africa is expected to double by the year 2050 with the corresponding increase in demand for water. Unfortunately, majority of the current residents of these cities are poor and, without special intervention, such a trend may continue. If such level of the water crisis and its associated challenges are witnessed at this level of urbanisation, one cannot but expect the worst scenario in the future. This has a grave challenge for cities in the future.

The current cities are not healthy and the future may likely not be. At least about 115 people die every hour from water-related diseases in Africa (UN, 2014). Typhoid and Dysentery have grown to the extent of being reported as epidemics in Sub-Sahara Africa. Unfortunately, Africa's health systems are weak. The recent outbreak of the COVID-19 pandemic and the struggles of African cities to curtail it has exposed the weakness of Africa's health system concerning policies, infrastructures and access. It is therefore, imperative that these cities are guided and guarded to prevent an outbreak of diseases – which is the first phase of management. This preventive measure includes the provision of basic amenities such as water.

No doubt, several policies have been formulated by different governments and various international interventions have been made to make water available, particularly to the urban poor. However, these efforts have, in part been crumbled with political schism, lack of sustainable plans and tolerance of the community themselves. Sustainable Development Goal 6 was scripted to address this challenge. Although partners in this goal, some of the African cities are yet to realize it – due to a lack of integrated urban planning.

Urban Planning and Health are indispensable twins and their correlations have been established in the literature. To achieve the latter in African cities, as they are preparing for the future, master planning of these cities and catering to their water needs are important.

Recommendations

The following recommendations are suggested for improving the public pipe-borne water system in the study area.

1. There is a need for a comprehensive inventory and periodic check of water points in the local government area and other ones in the state. This should be done by the state water works to aid the identification and repair of faults and challenges associated with these points.
2. Government should create new water points in central locations in the local government area. Also, the policy of one house at one point should be encouraged to enable house connection to the water point.
3. Kwara State Government and Ilorin West Local Government Area should intensify addressing the challenge of pipe-borne water supply in the study area. This should witness the strategic and definite involvement of stakeholders. This should include the total overhaul of Kwara State Water Cooperation and the provision of machines and other equipment required for their optimum operation.
4. The Local Government authority should use a partnership approach in the provision and management of public pipe-borne water in the area. Institutions should be encouraged to take up water provision as cooperate social responsibility.
5. The existing public water cooperation should be decentralized and zonal offices established for the attendance of complaints, repairs and the management of the public water system in the local government area.
6. The state government should carry out an inventory of all the points in the study area for the identification of specific repairs to be done on existing water points. New water points should also be created in the neighbourhoods.
7. A house-to-a-point policy should be formulated and implemented in the study area. In this situation, each house should be linked to a water point.

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