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OVERVIEW OF DOMESTIC WATER SUPPLY IN KANO STATE, NIGERIA

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Abstract

Accessibility to safe and clean domestic water by households is paramount for personal and developmental health at all levels in Nigeria. Kano State Water Board (KSWB) was saddle with responsibility of domestic water supply to the entire state. The state have about 22 water treatment plants that source, treat and distribute water to the residents of the study area. The data collected were from secondary sources, descriptive statistics was the statistical instruments used in the data analysis. KSWB supply about 415 million litres daily (MLD) to the Kano city and its environs and about 92 MLD to local government headquarters and semi-urban areas. Similarly, there about 50 commercial water standing pumps being operated and maintained by KSWB to ease water supply to nook and crannies of the state. Where pipe borne water is not connected, boreholes, hands pumped and concrete wells are constructed by Rural Water Supply and Sanitation Agency (RUWASA) to ease water supply at sufficient quality and quantity to rural communities in the state.

Keywords: Domestic Water Supply, Kano State, Nigeria

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INTRODUCTION

World Health Organisation (WHO) describes domestic water as water used for all domestic purposes such as drinking, bathing, laundry and food preparation. Domestic water consumption is an essential part of the total water use and differs according to living standards of the consumers in residential settings (Mohammed and Sanullah, 2017). The provision of safe and clean water at substantial quantity and standard quality are very vital ingredients to the sustenance and development of qualitative human life (WHO, 2006). As such, provision of clean water become the major challenge put forward by the developing countries to make water accessible to all irrespective to economic and social segregation.

In many African countries, water scarcity is a major challenge at local, national and regional levels. It has been estimated that about 75 to 250 million people will live in water stressed environment by 2030. Water scarcity in Nigeria is taking a new dimension, as residents of different residential settings do not have access to reliable, affordable and sustainable source of domestic water (Ojo, 2014), and in most cases the residence have to device a means to cope with water supply shortages such as rain water harvesting, minimizing water usages and so on (Nura, 2018). Nigeria is witnessing dramatic increase in population coupled with urbanization and need high living standards. These escalate the demand of water resources (Ajadi, 2010). The municipal and domestic water supply is the responsibility of state and local governments under the umbrella of the State's Water Corporation. Sometimes, the Federal Government intervenes to increase water availability and accessibility. Despite the fact that monitoring and evaluation of water supply and regulation are not given due consideration (Olajumoke, 2019). The water supply is acute shortage and attributed to climate change and poor government attention to the water supply sector especially in semi urban area, and slums and ghettos mostly resides by urban poor (Abdulkadir, 2019). As a result, these people of these areas are sourcing water from dangerous and unreliable source, which give rise to proliferation of water borne disease such as cholera and so on.

State Governments are responsible for the establishment, operation, quality control, and maintenance of urban and semi-urban and rural water supply systems through its agencies like water supply authorities, state water boards, and the Small Towns Water and Sanitation Agency. They are equally responsible for licensing and monitoring private water suppliers, monitoring the quality of water supplied to the public, and providing technical assistance to local government areas. Local Government areas are responsible for establishing, operating, and maintaining rural water supply and sanitation facilities in collaboration with local communities (Berta, 2015).

The water treatment plants in Kano state have the installation capacity of 506 million litres per day, Kano city and its environs alone required about 550 million liters of water per day (Nura and Ibrahim, 2014). The total water demands of Kano state is 975 million liters per day (Bello and Tuna, 2014). This shows that water requirement is high due to the high population, urbanization and urban nature of the city, which escalate demand for domestic, environmental and personal hygiene.

The aim of this paper therefore is to overview stages involves in domestic water supply to entire Kano state

Study Area

Kano State is located in the north-west region of Nigeria, with total land area of 20,131km² (7,773 sq mi), which represents 3.13 % of the entire total area of Nigeria. It is bordered to the west by Katsina State, to the south-west by Kaduna State, to the east by Jigawa and southeast by Bauchi. It was located between latitude 7^o45E and 10^o35 E longitudes 10^o30 N and 13^o02 N. The State has 44 local government areas within three (3) Geo- political zones, namely Kano Central, Kano South and Kano North.

Reconnaissance survey was conducted in the study area by the researchers' to familiar with the water supply attributes such as water treatment plants, water pumps, hand pumps and water vendors whom provide door-to-door service in the area. Secondary data is the types of data solely utilized by the researcher. It was documentary data sourced from Kano state water board (KSWB), related technical works, research articles and so on. Descriptive statistics was used to analyze data collected and the results were presented in tables and discussion followed.

RESULTS AND DISCUSSION

Greater Kano Water Supply

The greater Kano is an area within the radius of 30km from the centre of the ancient city. It is the responsibility of this division to efficiently distribute water coming from Challawa and Tamburawa water work to the greater Kano. The urban area of Kano comprises of six local government areas. Namely; Tarauni, Dala, Fagge, Kano Municipal, Gwale and Nasarawa, with population of 2,163,2225 (NPC, 2006), while the metropolitan comprises of eight local government areas, the above six mentioned, with addition of Ungogo and Kumbotso with total population of 2,828,861 (NPC, 2006). The greater Kano water supply is the largest portion of water supply to the Kano and environs. Here, about three main water treatment plants are responsible for water provision in the area. These three water schemes have the installation capacity of producing 415 million litres of water to the residences as shown in Table 1. Tamburawa and Challawa are the giant's water work in the entire study area. They are responsible for producing sufficient amount of water to the Kano city and environs.

Table 1: Water Treatment Plants Supply Water

S/N	Treatment Plants	Capacity (MLD)
1	1 st Challawa water work	20
2	2 nd Challawa water work	90
3	3 rd Challawa water work	90
4	Old Tamburawa Water work	20
5	New Tamburawa Water work	150
6	Watari	45
Total		415

Sources:Kano State Water Board, 2013

Kano state water board serves large number of consumers with potable water across the state. From Table 2 it is clear that the board supplies water to about 116,349 households from the selected sampled centres. In each of the centre there are number of houses, which are connected with pipe borne water. Hence, whenever there are any problems related to water supply the customers reported to the centre for appropriate decision to be taken. The 14 centres have the total of 116,349 customers but the active customers are about 44,764 due to the fact that some customers are disconnected by the board for the failure to settle water bill and others issues emanated.

Table 2:Domestic Consumers Supply by Kano State Water Board

S/N	Designation Centres	Total Number of Customers	Total Number of Active Customers
1	Yan Lemo	9,812	9,812
2	Gyadi-gyadi	10,744	10,744
3	Nasarawa	11684	5257
4	Sharada	8337	3020
5	Kumbotso	6376	2869
6	Dorayi	12480	3000
7	Fagge	2552	473
8	City	14065	4319
9	Sanimainagge	14096	3015
10	Yankaba	2525	1200
11	Tudunwada	7560	1010
12	Sabongari	2157	0
13	Kurna	5262	0
14	Gwammaja	8699	45
Total		116349	44764

Sources:Kano State Water Board, 2013

There are many residents and locality within the greater Kano where the pipe borne water connections do not reach. KSWB devise a means to supply water to the residences of such areas. There are about 354 standing pipes that were erected to supply water to the people as shown in Table 3. The Board leases the standing pipe to the water vendors. These water vendors are answerable to the board. They sell water directly to the consumers and other vendors that provide door-to-door services to the consumers. These standing pipes are managed and maintained by the board. Some of the residence finds it difficult to source water from these vendors because of nature of the narrow street in the inner city wall of the Kano. As such, distance remains one of the major determinants for domestic water consumption with, high consumption of water from those living near the source of water (Nura, 2020). However, with these standing pipes within their locality, they can easily get it water by themselves or buy from vendors.

Table 3: Commercial Stand Pipe Supply Water in The Study Area		
S/N	Location	No of Account
1	SabonGari	65
2	KofarRuwa	24
3	Fagge	37
4	Koki	07
5	Yan Awaki	06
6	Unguwauku	12
7	Badawa	16
8	KofarWambai	16
9	Kawo	09
10	Gama	44
11	Giginyu	03
12	Aminu Kano way	04
13	KofarWaika	02
14	Gwammaja	05
15	Jakara	13
16	Gyadi-Gyadi	10
17	Kafarmata	07
18	TudunNufawa	01
19	Katsina Road	02
20	Kumbotso	01
21	Yakasai	03
22	Karkasara	02
23	KofarDawanau	03
24	KofarMazugal	06
25	Kurna	10
26	Gobirawa	01
27	Tarauni	03
28	Daurawa	01
29	Hausawa Zoo road	06
30	Zaria Road	02
31	Lamido crescent	01
32	Pilgrim camp	01
33	Tukuntawa way	01
34	Unguwargini	01
35	Indabawa	01
36	Gwale	01
37	Lokongidangizo	01
38	Diso	01
39	Marmara	01
40	Zango	02
41	Kansakali	01
42	Duruminzungura	02
43	Duruminiya	01
44	Duruminkaugama	01
45	Gabari area	01
46	Unity road	05
47	Sarari	01
48	Hadejia Road	02
49	Maiduguri Road	01
50	Ibrahim Taiwo road	03
51	Dukawa	01
52	Nasarawa	01
53	Ungogo	01
54	Kumbotso	01
Total		354
<i>Source:Kano State Water Board, 2013</i>		

Semi-Urban Water Supply

In an effort to provide sufficient water to the rural populace, Kano state government established sixteen (16) regional water schemes across the state, with responsibilities of water provision to urban, and semi urban areas mostly local government

headquarters and other big towns or settlement in the state. These schemes were distributed across the three senatorial district of the state that is Kano-Central, Kano-North and Kano-South (Table 4)

S/N	Facility	Installed capacity	Utilization Capacity
1	Wudil	20,000,000	13,333,000
2	Kusalla	15,000,000	12,500,000
3	Joda	9,600,000	9,600,000
4	TigaRano	7,200,000	3,000,000
5	Guzuguzu	7,200,000	6,000,000
6	Fada	6,400,000	4,000,000
7	Magaga	4,800,000	4,000,000
8	Gari	4,800,000	3,400,000
9	KafinChiri	4,800,000	4,800,000
10	Tomas	2,400,000	1,000,000
11	Chiromawa	2,400,000	1,600,000
12	TigaTiga	2,400,000	600,000
13	Tudun Wada	2,400,000	1,000,000
14	Kura	1,400,000	300,000
15	Bunkure	1,000,000	500,000
16	Mainika	300,000	200,000
Total		92,100,000	65,833,000

Source:Kano Sate water board, 2013

These sixteen (16) regional water schemes in Kano state built across different locations in the study area were designed to ensure effective and efficient water supply to the local government headquarters and larger settlements (towns) outside greater Kano. These regional water schemes have the installation capacity to source, treat and pump about 92 million litres of water daily (KSWB, 2013) without which an acute water shortages will be experiences in different local government areas across the state. Nevertheless, due to power failure, cost of operation and logistic problems the scheme can only supply not more than 65 million litres daily. These regional water supply schemes were operated, managed and maintained fully by theKano state water board.

Rural Water Supply

Potable water supply in the rural area is very critical. Large numbers of rural dwellers face difficulties in accessing domestic water for personnel and environmental hygiene. Rural water supply and sanitation agency (RUWASA) is responsible for supply water to the rural communities in the 44 local government areas across the state through hand operated boreholes, hand dug-wells, solar operated borehole, wind driven borehole and mechanized boreholes based water supply scheme. The agency was established to ensure it provide access to safe and clean drinking water and sanitation to the rural dwellers of the state (WRECA, 1974). There are philanthropist, community organization and nongovernmental organization who supplement government efforts to boost water supply in rural communities in the state thereby by promoting water supply and sanitation.

CONCLUSION

The public water supply in Kano state is the responsible of Kano state water board. Therefore, the board supplies water in three stages. The greater Kano water supply which takes care of water supply within Kano city and environs. Six water treatment plants meant for this work are: old and new Tamburawa, Challawa first, second and third phase as well as Watari have capacity of provision about 415MLD. The second one is urban and semi-urban water supply, here; there are about sixteen (16) regional water schemes which combine has the capacity to supply 92MLD to local government areas and major towns in the state. The third stage is the provision of water to the rural areas. Here, Kano state efforts to provide potable water to the rural communities have been focused mainly on digging deep tube wells and installing hand- pumps to extract groundwater. Majority of the villages and rural communities outside the regional water scheme are sourcing from boreholes, concrete line and other local types. Despite the government, nongovernmental, communities, philanthropists and individuals efforts to ensure water availability in sufficient quantity but still there are elements of water scarcity in the state. As such, some of the populace in the state depends on vendors for their domestic water supply (Bello et.al, 2021)

because of the irregularities and uncertainties in water supply system. Therefore, the state government should collaborate with all the stakeholders in water supply to ensure water availability at sufficient quantity and quality across the state.

References

- Abdulkadir, B., Nura, I. B., Tajuddin I. W. & Ibrahim K. A. (2019). Assessment of water supply shortages in Zango, Rimin Kebe area, Ungogo Local Government, Kano State. *DUJOPAS5* (2a), 23-30.
- Ajadi, B. S. (2010). Portable water availability and consumption pattern in Ilorin metropolis, Nigeria. *Global Journal of Human Social Science*, 10 (6/1), 44-50.
- Bello, N. I & Abdullahi, I. K. (2014). Water supply situations in Kano metropolitan prospects and challenges. *International Journal of Research in Earth & Environmental Sciences*, 1(4),25-32
- Bello, N. I., Shehu, A., Abubakar, S.A., Bello, A. & Imam, M. Z. (2021). Water vendors participation in domestic water supply in Unguwa Uku, Tarauni Local Government, Kano State, Nigeria. *Fudma Journal of Science*, 4(4), 252-258. DOI: <https://doi.org/10.33003/fjs-2020-0404-509>
- Bello, N.I. & Tuna, F. (2014). Evaluation of potable water demand and supply in Kano State, Nigeria. *International Journal of Scientific Knowledge, Computing and Information Technology*, 4(6), 35-46.
- Berta, M. (2015). State Water Agencies in Nigeria A Performance Assessment. World Bank Group
Kano State Government, Kano State Water Board Customer Service Charter, 2014
- Mohammed, A. H & Sanaullah, P. (2017). An empirical analysis of domestic water sources, consumption and associated factors in Kandahar city, Afghanistan. *Resources and Environment Journal*, 17(2), 49-61.
- National population commission (2006). Gender and sustainable development, Nigeria population census 1991, analysis.
- Nura, I. B., Abdulkadir, B., Ahmad, S. A. & Ibrahim, K. A. (2020). Water consumption determinants in Rimin Kebe area, Ungogo Local Government, Kano State, Nigeria. *International Journal of Research and Innovation in Social Science (IJRISS)*, 4(7), July 2020|ISSN 2454-6186 .www.rsisinternational.org Page 652
- Nura, I.B., Ibrahim, K.A, N.S, Muhammad & Hamza, I. (2018). An assessment of socio-economic implications and coping strategies of water supply scarcity in Tudun Wada area, Kaduna State. *Dutse Journal of Pure and Applied Sciences (DUJOPAS)*, 4(1), 83-90
- Ojo, O. M. (2014). Availability and use of domestic water in Osiele area of Ogun State, Nigeria. *Research Journal in Engineering and Applied Sciences*, 3(2) 104-107.
- Olajumoke, R., Balogun, M. & M. Redina (2019). Water supply regulation in Nigeria: problems, challenges, solutions and benefits. *RUDN Journal of Ecology and Life Safety*, 27(1), 65-81. DOI 10.22363/2313-2310-2019-27-1-65-81 UDC 556.3
- WHO, (2006). *Protecting Groundwater for Health: Managing The Quality of Drinking-Water Sources*. O. Schmoll, G. Howard, J. Chilton & I. Chorus (Eds.) ISBN: 1843390795. London, UK: IWA Publishing.
- WRECA, (1974). Hydrologic Yearbook 1963-1968, Water Resources Engineering Construction Agency Kano State, Nigeria.