CHAPTER ONE

GENERAL INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Nigeria is one of the most urbanized countries in Africa south of the Sahara. Some of the urban centers in this world have history which dates back to first millennium AD. However, the problems and challenge posed by rapid urban growth in Nigeria is immense.\(^1\)

However, supply of sufficient and qualitative water to an ever expanding population has continued to remain a serious challenge to various governments and communities in particular and various agencies charge with its provision in general, especially in Africa. For example, in 2000, the World Bank report showed that more than 1 billion people lack access to adequate water supply for household use, and that in the next 30 years as many as 5.5 billion will live in areas suffering from moderate to severe problem of water resources.\(^2\)

Some Post independent States in Nigeria have been facing serious problem of water supply to the populace and they began by adopting certain policies and executing certain programs to provide portable water supply. This research is therefore, a supply of water supply in Kaduna metropolis from 1960 to 2005.

1.2 STATEMENT OF THE PROBLEM

Despite the efforts made by various governments in order to ensure adequate water supply in Kaduna Metropolis, yet, water has remained one of the basic challenges in the town. This research therefore intends to examine the history of water supply in Kaduna. The research attempts to answer the following questions:
1. What was the role of government in the provision of portable water in Kaduna Metropolis?
2. What was the impact of immigration and urbanization on the provision of water in Kaduna Metropolis?
3. In what ways did provision of water influence development in Kaduna Metropolis?
4. What were the challenges faced by Kaduna State water board in the provision of water in the Metropolis?

1.3 SIGNIFICANCE OF THE STUDY

The significance of this research lies in the fact that, it avails us with the knowledge of urban water supply with particular reference to Kaduna Metropolis. The work highlights roles of various governments in the provision of water and impacts of water supply in Kaduna Metropolis. The work will therefore be useful to policy makers as it addresses the challenges of water supply in Kaduna Metropolis. In addition, the work will be useful to subsequent researchers on the history of Kaduna, and to writers who engage in the history of urbanization and water resources.

1.4 AIM AND OBJECTIVES

The aim of this study is to re-examine the historical development of water supply in Kaduna metropolis from 1960 to the year 2005. In particular, the following are the objectives of this research

1. To assess the origin and development of water supply in Kaduna metropolis

2. To analyze the policies put in place by various administrations in the development of water supply
3. To assess the impact of water supply on the people of Kaduna metropolis.

1.5 SCOPE AND LIMITATIONS

This work is on the history of urban water supply in Kaduna Metropolis, 1960 – 2005. The research started from 1960 when the country attained its independence and management of water supply in Kaduna Metropolis was handed down to indigenous personnels. The research terminated in 2005 when the Kaduna State government emphasized on the provision of water supply in Kaduna Metropolis.

The research gives emphasis on some wards that include: Unguwar Sarki, Barnawa, Unguwar Rimi, Tudun Wada, Rigasa, and Kawo.

It should be noted that the reasons for choosing these sub-settlements are due to their large population, high rate of water use for domestic and commercial purpose, networked with water pipeline and subsequently government affection to these areas, compared to other sub-settlements.

1.6 CONCEPTUAL CLARIFICATION

The following concepts were used in this research. However, since some of them have other usages, for the purpose of this research work, they will be used as defined below:

**URBANIZATION:** is the process of improving social infrastructures such as electricity and good water supply etc.

**METROPOLIS:** is a large important city often the capital city of a state or a region. In other words, metropolis refers to a large important area of a state.
SETTLEMENT: The UK Department for International Development defined settlements as areas with strong influence of the urban context and with great quantity of labour supply, but at the same time influenced by shortages of land, poor infrastructure and urban growth in their Natural Resource System Program.

URBAN WATER SUPPLY: What are meant by urban water supply are the facilities for meeting the water requirements of an urban population of the public sector and of trade and industry. The distribution of water may take place via either distribution systems (piped supply) or non-piped supply points (e.g. wells).

1.7 RESEARCH METHODOLOGY

In the course of conducting this research, the researcher employed two major categories of historical research which are primary and secondary sources.

Oral interviews were conducted on Kaduna State Water Board officials, civil servants, farmers, Engineers, and general populace who are beneficiaries of water supply. Among the primary sources used also for this research were archival records. The research therefore, used the National Archive in Kaduna in acquiring data. Secondary sources were also used in conducting the research both published and unpublished materials such as text books and journals from Kaduna State University Library, Ahmadu Bello University Library, Arewa House, Federal University Dutsin-Ma Library and internet materials were also consulted. Although as it is well known, secondary sources having the limitation of alteration, more importantly subjectivity, distortion, in spites of this, are very important sources of information and were cross checked with primary sources to get the right picture of urban water supply development in Kaduna metropolis. All sources gathered were analyzed and duly acknowledged.
1.8 LITERATURE REVIEW

Literature review is central in any historical writing. It provides the basis for analysis on the major assertions that have been raised on the topic of analysis. There are several literatures on urban history or infrastructures but few had specifically focused on our research that is water supply in Kaduna metropolis. Nevertheless, there are relevant works in the course of conducting this research.

Shehu argues that the transformation of Kaduna metropolis into a cosmopolitan city was a twentieth century phenomenon. In his work, he brought out the social, economic as well as political significant of migration in the growth and development of Kaduna. It should be noted that the history of the development of Kaduna will not be complete without a look into the state of infrastructure which water supply form part.3 this research therefore fill the gap by shading light on how urban water supply played part in the development of Kaduna metropolis.

Another piece of work by Dandume analyzes the major factors behind sustainable water supply in both urban and rural areas in Nigeria. He cited some examples with the major protects in water supply in the country and their overall impacts on both rural and urban centers. He went further to consider solutions on how to forestall the acute shortage especially in rural areas as well as making urgent call on all stake holders on the need to participate towards sustainable water supply to all without exception. Though it talked about urban, the work did not discussed water supply in urban area like Kaduna in an explicit form which further testified the research.4 this research therefore filled in the gap by shading light on how government and it agency can improve urban water supply in the development of Kaduna metropolis.
The work of Ubah further explained about the military factor in the urbanization of Kaduna. He particularly focused on the role of the military in the economic transformation, provisioning of medical services and above all, guarantee of security which prompted rapid urbanization. He further argues that if military structures were to be removed from the city, then what will be left will be entirely different from the Kaduna that is well known to many. His work was constructed to the contribution of the military in the urbanization of Kaduna. He did not discuss what attracted the military to settle in Kaduna among other things included availability of water supply in Kaduna within historical context which the military found easily accessible.\footnote{5} This research will examine the availability of River Kaduna which led to the development of urban water supply rather than that the role played by the military.

The work of Oyedele gives us an insight into the factors for the established of Kaduna as a capital city which included factors of transportation network, political and economic domination of the region. Other important considerations were availability of enough water supplies, strategic locations in items of centrality and good climate and communication among others. The work showed that the establishment of Kaduna marked a turning point in the history of urbanization in Nigeria\footnote{6}. This research, therefore filled in the by shading light on how government improved and encouraged the development of water supply in the metropolis of Kaduna.

The M.A. thesis of Ahmed treats urbanization process in Kaduna Metropolis in general. The work analyzes how Kaduna became the center of British colonialism in northern Nigeria in 1913 after Lokoja and Zungeru which first served as a military and administrative capital of Northern Nigeria. He also argues that the British embarked on development and provision of urban infrastructural facilities especially Government Reservation Areas and from there,
extended their supplies to places found vital for colonial mission.\textsuperscript{7} This research has examined the supply of water not restricting it to the Government Reservation Areas (GRAs) but also to other areas within the metropolis.

Also Akpen made a comparative and extensive analysis of three major colonial towns in Northern Nigeria which includes Kaduna, Jos, and Lokoja. He maintains that electricity and water supply had been earlier been introduced in Lokoja, Jos and Kaduna, they did not cover all parts of these cities. He further argued that even when the British decided to embark on the expansion of both electricity and water schemes, they committed very marginal resources and funds and also focuses on areas of economic importance.\textsuperscript{8} The research will examine the other importance of water supply rather than restricting it to economic importance.

Nadabo in his book “\textit{Tarihin Garin Kaduna}” narrated the history of Kaduna State in general and some of the various developments that took place in some parts of Kaduna. More so the book explained the creation of Kaduna as the capital of Northern Nigeria as which he said led to the development of other settlements such as Makera, Sabon Gari e.t.c\textsuperscript{9} the work however, laid more emphasis on the creation of Kaduna as the capital of Northern Nigeria, but did not bring into limelight the role of water supply and its impacts on the economy of Kaduna. This research for this reason examines the role of water supply and its impacts on the economy of Kaduna.
ENDNOTES


CHAPTER TWO

LAND AND PEOPLE OF KADUNA STATE

2.0 INTRODUCTION

This chapter examines the land and people of Kaduna State by looking at the geographical location of Kaduna State. It is very important for us to know the early people of Kaduna State so that we can have a clear picture about them. More so, the chapter also examined the traditional political system of the people, as well as their socio-economic system.

2.1 GEOGRAPHICAL LOCATION OF KADUNA STATE

Kaduna State was created on 27th May, 1967 out of the former Northern region by the then regime of General Murtala Ramat Muhammed. Its capital city is Kaduna, located at the centre of Northern Nigeria. It has a political significance as the former administrative headquarters of the North during the colonial era. The State shares boundaries with Niger State to the west, Zamfara, Katsina and Kano States to the North and FCT Abuja and Nassarawa to the south. Kaduna State occupies 46,03 square kilometres. Zaria is one of the major towns in Kaduna State and is very rich in history. Queen Amina ruled Zaria and was known as a great warrior, her territories stretching as far as Bauchi in the east. She built a walled town wherever she conquered. Kaduna State provides the meeting point of the earliest histories of Nigeria. It is the home of Nok which gave its name to the oldest culture of Nigeria – the Nok culture. Kaduna is situated on latitude 10.36 North and 070.281 East. It is on the southern margin of the northern plateau and occupied fairly central position in the northern region. It was well placed to serve as a capital. Furthermore, Kaduna derived its name from river Kaduna. The Hausa called it ‘’Kogin Kada’’ (river of crocodiles). Kaduna is the plural form of the Hausa word Kada (crocodile). However,
some contend that Kaduna is in Gbagyi land. The question that arises is what name do Gbagyi call the area? It is important to point that in Gbagyi language Kaduna means ‘‘crossing the river of snails’’.\(^2\) Thus, while one cannot dismiss reference of the two as the likely origin of the name, it would seem that the Hausa were the most probable group that founded it.

Kaduna topography has been described as consisting of park like terra relief situated about 100 feet contour line. So it has a mean maximum temperature of 910 during wet season. It receives some 40-60 inches of rain which rises to peak from July to September.\(^3\)

The plains on which Kaduna is situated are part of these vast, gently undulating plains scenery which extend almost unbroken from Sokoto to Lake Chad and beyond. Such plains are characteristics of Africa as a whole. At first sight, they seem remarkable only for their visual monitory and apparent geo-morphic simplicity. The drainage system focuses on the river Kaduna, a major tributary of the river \textit{Galma}. River Kaduna contains water throughout the year unlike many of its tributaries which dry up during January to June. The duration flow in these later streams depend on a number of factors, the size of the collecting area, their permeability regulating the size of the fluid plain and gradient land surfaces.\(^4\)

The climate factor is significant not only in relation to its effect on the character of the vegetation but also because climate to a large extent has played a vital role in the people’s way of life, including pattern of economic activities of the people of Kaduna State. Therefore, Kaduna located on a plateau at a height of about 2200 feet above sea, possess a tropical continental climate. The sentimentality of its climate is more pronounced during the dry season, especially in December and January. The mean daily maximum temperature rises gradually to April and then it drops rapidly to its secondary peak in October. The mean maximum temperature rises from its
lowest value in December and January, to its highest in July and August. Therefore; the climatic factor played a prominent role in the agricultural development and other economic activities in the State.

The amount of rainfall is high and the rainfall factor has determined the nature of the vegetation of Kaduna State. The town is thus located in the Northern Guinea savannah ecological zone, which is a form of transition woodland. The vegetation cover found in the area is composed of those found in both the southern guinea and Sudan savannah which were of immense economic importance to the inhabitants of the State. The vegetation consists of trees of great economic values, which the people use as food, medicine and construction. The trees include; baobabs, parking and tamarindeindica among others which were supported by the soil and climate factors.

The tree products of the area were important to the socio-economic development of the people of Kaduna.

2.2 THE EARLY PEOPLE OF KADUNA STATE

As we said earlier, Kaduna has derived its name from the Hausa word “Kada” meaning crocodile and “Kaduna” is the Hausa plural word for crocodiles many of which are found in River Kaduna.

The Hausa people were among the early people of Kaduna. In a popular opinion the origin or emergence of the Hausa could be traced with the famous Bayajidda legend, a prince of Baghdad, arrived in Daura (the oldest Hausa City State) and married the Queen of the town. Their seven sons founded the other States of Zazzau (in Kaduna), Katsina, Gobir, and Kano among others.

However, the Hausa in Kaduna, like the ones in most cities and towns in Nigeria came to being as a result of the coming together of some smaller settlements close to one another with a view of forming a bigger settlement. That could be due to a common desire of the hitherto smaller
settlement. Perhaps, they all wanted to benefit from a fertile land in the area. However, Kaduna State is a multi-cultural and multi ethnic State and among the early people of Kaduna State includes the Hausa, Gbagyi, Atyap, Kurama, Ham, and Koro among others.  

2.3 THE TRADITIONAL POLITICAL SYSTEM OF THE PEOPLE OF KADUNA STATE

In the above discourse we have seen that the Hausa people were among the early people of Kaduna State and we have also seen that apart from the Hausa people, the Gbagyi, Atyap, Kurama, Ham and Koro to mention but a few are also among the early people of Kaduna State. Thus, in the discussion that will follow, we shall critically discuss the traditional political system of the people of Kaduna State. However for the purpose of clarity, we shall focus on both the Hausa and Atyap people traditional political system because the Hausa people of Kaduna State had a centralised traditional system, while the Atyap people of Kaduna State had a decentralised traditional political system.

Generally, African political systems have been divided into two broad groups. The first group comprises of the societies that have centralized authority, while the second group is characterized by societies that are segmented. In the first group of societies there were differentiations based on privileges, wealth and status resulting in the distribution of power and authority. But these attributes were lacking in the second group of societies. However, the Hausa and Atyap people of Kaduna State will be our area of concern because the Hausa had a centralised traditional political system, while the Atyap people had a decentralised traditional political system. It is therefore in this light that this research shall focus on the traditional political system of both the Hausa and Atyap people.
The main traditional political system of the Hausa was a monarchical system of government under the rule of a king, Emir or Queen. The head of such government is known as the monarch who is usually the sole ruler with absolute power and authority. However, he was assisted by the Emir’s ministers, District Heads (*Hakimai*), the village heads and Alkali court. Emir is head of an emirate, vested with legislative, executive and judicial power. The emir is supreme in decision making and whatsoever he ordered must be carried out, though with the tenet of Islamic laws called Shari’a. The Emir is both the political and religious head because he ensures that the provisions of Shari’a are adequately followed without any reservation. Emir’s court was the highest and final. The Emir had an advisory council who helped in day to day administration of the emirate. These groups were popularly regarded as the Emir’s ministers assigned to various offices for the purpose of administrative activities. The Galadima is best known as the administrator of the capital of the emirate. That is to say he is in charge of emir’s capital territory. Madawaki can be regarded as the head of cavalry (commander of the armed force). The Dogari is known as the chief of police. However, the emirates system was divided into a number of districts headed by ‘*Hakimi*’. *Hakimi* is regarded as a district head whose responsibility is that of tax collector. In the same vein, each district is divided into villages headed by village heads. The village heads helps to maintain peace and order in the village administration.⁹

On the other hand, the Atyap people developed a decentralised traditional political system, unlike the Hausa People that developed a centralised traditional political system. The traditional political system of the Atyap people was that of village confederacies or consolidated group type of decentralized State system. In this system, the people recognized the authority of the chief priest known as the “Atiyihwap”. It is however important to State at this point that the leadership of the chief priest was that of obedience not power. This means the chief priest commanded
obedience and made some decisions but he did not have power to enforce decisions. The political groupings and unity was characterized by the sense of kinship or the possession of a common religious cult. The societies organized themselves in groups to enable them resist external aggressions or environmental disasters. The socio-political organization was arranged along the horizontal lines based on clans and the segmented lineage system. Real political power was vested in the council of elders (gerontocracy), the clans and lineage heads and holders of ritual offices. The elders were representatives of the ancestors and the mediators between the ancestor and the kins-groups. This close relationship between the elders and ancestors gives the elders semi political and judicial authority. The institution of the elders was the main basis of political power and authority in the society. The system meant that the elders in the community represented the corporate personality of the clan or the lineage group. In the council, decisions were usually taken by way of agreement in matters of public interest and in the name of the clan or lineage community. Authority vested in the hands of the oldest men. The oldest men were normally the heads of the families or clans or lineage or communities. No one man had absolute power over the people.  

2.4 THE SOCIO–ECONOMIC SYSTEM OF THE PEOPLE OF KADUNA

The people of Kaduna engaged in wide range economic activities notably; farming, livestock production, fishing and hunting as well as trade. Thus in the discussion that will follow, we shall examine the various economic activities engaged by the people of Kaduna.

2.4.1 FARMING

The people of Kaduna engaged in farming. Farming was particularly important in the area because of available of fertile and excellent land for the cultivation of food crops. Farming was
both carried out by men and women. The farmers depended on implements such as digging stick, hoe, cutlass and sickles. Major crops cultivated included millet, guinea corn, hungry rice, among others. These crops will be discussed below:11

Millet

Millet was broadcast on seedbeds of about 1 metre by 50 metres and was grown during the first rain period, that is, May/June. After 2 months, the millet seedlings were uprooted from the seedbed and transplanted by slanting method on ridges, around the month of August. Millet was used to prepare recipes like kunu, fura, tuwo and others. The use of labour in millet production was manual and this was done on communal basis (gayya). The main implement used in the cultivation of millet was the hoe, because there were no tractors during this time. Millet production was important to the people because it served commercial purposes, thereby bringing money to the people. Trade in millet was mostly internal, that is, between the farmers and the Fulbe who used it to make fura and also between the farmers and those who did not engage in farming. Sometimes, trade in millet could also be external, that is, between the farmers and other neighbouring villages. But this form of external trade was not well pronounced because the neighbouring villages also engaged in millet production.

Guinea Corn

Guinea corn was planted in the months of June – July by direct seeding on the ridges, putting about 5-6 seeds per hole, which were later thinned down to about 2 regardless of distance between plant-to-plant. Its recipes included Pete (porridge), couscous, locally brewed wine (burukutu) and others. Form of labour in guinea corn production was also human labour used with the help of the hoe. This was done on a communal basis mostly by the youths of the village.
The youths were always willing to participate because foods were made available on the farms. Guinea corn generated revenue to the village because it was used as a commodity of trade. The villagers used the money gotten from the trade to satisfy their needs, like buying cloths and feeding their families. Guinea corn was also a commodity for trade by barter. After harvest, the stalks of guinea corn were used for building houses or fencing of farm products in order to prevent animals from eating them. The stalks are also burnt in order to produce ashes that were later turned into potash. The potash was used in the preparation of food, most especially soup or beans.¹²

**Acha (Hungry Rice)**

This was planted normally on a virgin land, freshly cultivated, either on flat ridges or ridges that were not very high. Acha seeds were broadcast all over the place, not minding whether they fell on the ridge or not. Acha helped greatly in generating revenue to the people because it was available all through the year and it was used for external trade to other communities outside Kaduna area. Acha served as rice and it could be used for various recipes like those of millet and guinea corn. It was more important because it could be used for medicinal purposes. Many local medicines were prepared using acha palp to heal various ailments. In the case of barren women, acha medicine was prepared for child bearing. Hunters used it to make charms against wild animals; they could use it to disappear. Acha is cultivated in Zangon Kataf, Lere, and Kaduna South Local Government Areas among others.

Others crops grown by the people included maize, gurjiya (local groundnut), yam, cassava, among others.¹³
2.4.2 LIVESTOCK PRODUCTION

Livestock production is a popular activity among women in most countries. In fact, women have been reported to be the predominant owners of poultry. Feeding of backyard poultry is a good example of the recycling of household and farm wastes and the use of naturally occurring resources. Women were regularly involved in disposal and replacement of poultry litters. They devised innovative ways of using waste products. Grain and grain by-products are usually offered as supplements to the birds. Women were involved in different activities of poultry production. They participated in preparation for the brooding activities which included cleaning, washing and disinfecting of the brooding room, arrangement of feeders and setting of lighting, spreading of litters and acquisition of feeds and drugs. This operation required thorough handling, skillful and careful planning. Therefore, most women preferred to handle this operation by themselves.\textsuperscript{14}

In our area of study, there were varieties of poultry housing systems. These ranged from crudely constructed houses, to bamboo baskets, wire mesh or bamboo cages placed in the backyard, to innovative systems of putting bamboo or wooden cages on tree tops, wooden poles or along the roof. Saving the birds from predators is the major objective of these innovations. Birds are trained to climb or fly over to the cages, placed on trees - or are manually picked up and put there. The entire rearing of small animals is the responsibility of women. It involves small money for selling and buying of poultry products and serves as a “reserve bank” that provides ready cash and food. In Kaduna, women traditionally play an important role in livestock production. Most of the productive activities of women are performed within the household. Though they may appear to be unemployed, generally they are overworked. Women make a direct contribution to the economy through their participation in agricultural and non-farm
activities and indirectly coupled with the fact that they are responsible for all the domestic work such as cleaning, cooking, washing, child rearing, raising poultry and vegetables as well as tending animals. Poultry raising was a popular activity among rural women in Zangon-Kataf area. It could provide meat for the family, manure for crop production, feathers and other items for traditional rituals and gifts for friends. Labour requirements are low compared with other farm activities. Small livestock and production tasks can be combined with women's other household responsibilities. Unlike in the case of larger livestock, women often control the marketing of poultry and poultry products.

During the pre-colonial era, most women practiced the extensive system of livestock production, where fowls ranged freely and scavenged in the backyard, which required only minimal cash expenditure on feed. Subsequently, some had introduced a semi-intensive system, based on confinement or semi-confinement of the poultry, requiring building of sheds and purchase of feed. An important reason for keeping poultry is that it gives status to the owner, though not as much as cattle.

The importance of livestock cannot be overestimated. Animal protein is essential in human nutrition because of its biological significance. Poultry and poultry products such as poultry meat and eggs are important food for improving nutritional and health status, particularly of children, pregnant women and weak persons. Poultry was a source of income for buying soap, cooking oil and other daily needs. Around 50% of the eggs were sold. The sale of chickens was mainly important during festivities or in case of emergencies.
2.4.3 FISHING AND HUNTING

Fishing was another popular occupation of the people and was often combined with farming. The fish caught included mullet: grandisquamis, tilapia, and malatica and chrysichthys waiter. Fishing is an ancient economic activity to the early people. It was of tremendous economic value to the people. Fish was one of the major articles trade. Fish of various kinds were either dried in the sun or smoked in order to preserve them for long or short distance market. Fresh fish were said to be marketed mostly in short distance areas owing to the perishable nature and problem of storage facility. Professional fishing was characterized by craftsmanship and special skills such as boat, canoe, paddle, float, buoy and net construction coupled with invention of a variety of indigenous fishing techniques and gear. The major rivers where fishing was practiced in the State included River Kaduna, Rafin Kunu and River wonderful.

Hunting was also popular and widespread. It could be done by one person. But generally, it was carried out in groups of three or more people. The animals hunted included grass cutter, grasshopper, deer, and antelope, among others. Hunting could be regarded as one of the earliest economic activities to the people. It was very significant because many people depended on it for economic survival at a stage of economic development. However, as time went on, hunting became relevant supplement to agriculture. Hunting during this period was of various levels. At lower level, hunting included setting of snares for birds, young animals such as squirrels, monkey, and grass cutter among others. Another level was hunting for larger animals such as crocodile, pig, and antelope, among others. Hunting was a reliable source of meat and animals skin for cloth, shoe and drum making.
2.4.4 TRADE

A very important economic activity of the people and perhaps the most common was trade. This involved exchange of products in local and distant markets. In local or external trade, people met in periodic markets and exchange the foodstuffs, livestock, and fish among others. Long distance trade involved exchange of goods in distance markets. There were three types of trade among the people during this period. First, there was simple trade by barter between people within one household and between members of a few households. Secondly, there was trade at the markets that involved both barter and money exchanges. This means goods could be exchanged with goods and also with money. Thirdly, there was external trade with other traders from outside the area, in larger markets. These exchanges were necessary and possible because different household were producing different articles in differing quality and quantity. Items of trade included millet, Guinea corn, wheat, and beans, among others.19

2.5 CONCLUSION

This chapter examines issues such as the geographical location of Kaduna State. It also looks at the early people of Kaduna State and their traditional political system. More so, this chapter further examined the socio – economic system of the people of Kaduna State whereby we discussed issues such as farming, livestock production, fishing and hunting as well as trade. From all this, it can be said that the early people of Kaduna State had their own form of traditional political system which was organized. The people had developed a viable economic system based on farming, livestock production, fishing and hunting as well as trade. The exchange of the products in local and distant markets not only drew the people closer to their trading partners, but it also encouraged co-operation and inter-relations among them.
2.6 ENDNOTES


CHAPTER THREE

ORIGIN AND DEVELOPMENT OF URBAN WATER SUPPLY IN KADUNA METROPOLIS

3.0 INTRODUCTION

This chapter is concerned primarily with the supply of water in Nigeria during the colonial period. While examining the colonial motives for infrastructural provisioning, it analyzed the trend and pattern of colonial water supply in urban areas in Nigeria. The chapter laid emphasis on Kaduna metropolis especially the areas we focused on. This chapter also focuses on water supply on the people of Kaduna area i.e. (Barnawa, Kawo, Rigasa, Tudun Wada, Unguwar Sarki and Unguwar Rimi) during the period under review.

3.1 HISTORICAL BACKGROUND OF WATER SUPPLY IN KADUNA METROPOLIS

In the pre-colonial period, the people of Kaduna area mainly utilized wells, streams and rivers as sources of water for domestic use and for irrigation farming. Colonialism changed this pattern. As one of the urban area in colonialism Northern Nigerian and as the headquarter of the northern region, Kaduna receives the attention of colonialist on the provision portable water in Kaduna, programmes for water supply started and commissioned in the 1930s. However, throughout the colonial period, that is to say, up to 1960, Kaduna have been facing shortage of water as portable water was supplied mainly to the Government Reserved Areas (GRAs). More supply to nooks and crannies of Kaduna metropolis only began in the 1960, a starting period of this research.
Water Supply development must be regarded as the foundation upon which most native welfare services must rest. A comprehensive programme of water development should therefore be undertaken. The British government appeared to be concerned with water supply partly because of the health implications associated with drinking water from an untreated source. It was based on this consideration that water works were constructed as part of the Post-World War II development. As indicated in table 2 the quantity of water supplied to the urban centers was even far below their requirement. For example, Kaduna's population by 1939 was 9,595.3 However, the-water supplied for Kaduna was 387 thousand gallons per-day, which was grossly inadequate.

Water works in Nigeria during the colonial period were categorized into completed, partial and proposed schemes and Kaduna was classified into completed schemes. Water supply was provided by the two principal authorities: Government water supply controlled by the Public Works Department (PWD), which was responsible for the investigation, preparation, construction and maintenance of all government water supplies and the second was the Native Administration water schemes, which received both financial and technical assistance from the central government. It should be noted that Kaduna was given special consideration on water supply due to the large presence of Europeans as well as availability of ample water sources. The major consumers of pipe borne water supply in Kaduna included those in the European Quarters, European Hospitals, Administrative Buildings, Commercial Trading Companies among others. That is to say, water provisioning in Kaduna during the colonial period was discriminatory.

Importantly, water supply was restricted and streamlined to European Residential Areas, which made people in Kaduna obtained their water from the smaller streams and few hand dug wells. Oyedele observed that supply of water to most parts of the city posed a serious problem that
went unattended until 1958 when a pipe water supply system was finally completed, connecting the city with the Kaduna river. He maintained that prior to this date (1958), Kaduna residents were forced to rely on wells which contributed to the spread of infectious diseases⁶.

As noted elsewhere, Kaduna is blessed with abundant water supply that can even extend to settlements beyond the metropolis. Lack of concern towards urban water supply by the colonial government especially in Kaduna as in the case of the whole country became obvious from the launching of the Ten Year Development Plan 1945 to 1955. For considered grossly inadequate. It was estimated that the colonial government generated substantial amount of tax. Yet, the British complained of lack of funds and allocated a very meager sum of £7,000 to urban water supply in Kaduna⁷.

During the period of Great Depression, the Medical Department reported the outbreak of water borne diseases such as typhoid, schistosomiasis, and cholera and so on. It compelled the British government to provide portable water but even then it was only to the European officials and other government officials. They emphasized that water meant for consumption should be treated, filtered and boiled before distribution. It should be pointed out that this method was only applicable to European supplied water because as claimed by the British, Africans were accustomed to drinking contaminated water. In the case of Tudun Wada for example, lack of economic prospect and low population density with no European presence left the area neglected in the supply of water. As a matter of fact, an only geological investigation was carried out in the area without any funds allocated for the supply water. Residents of Tudun Wada during the period moved to distant locations to fetch water from River Kaduna. However, wells were dug in many places within the settlement, prominent of which are the ones near Tudun Wada Cemetery, and Layin Kosai. Every morning buckets are placed in line, waiting for the opening of the wells⁸.
Furthermore, lack of water supply in Bamawa during the colonial period created untold hardship to the residents. Though few taps were available but they cannot address the water needs of the area. It should be noted that the increased demand for water in Barnawa created an uneasy frosty relations between the African inhabitants and the Europeans in the area. The Europeans who resident in Barnawa were provided with water and in situations of shortages, they were supplied water in tanks and jerry cans. This provoked the African inhabitants as they had to trek down to river Kaduna for their daily supplies.

The above situation contrast sharply what obtained in the European reservation i.e. Unguwar Rimi and Unguwar Sarki because virtually all the houses were provided with pipe-borne water so that each family had water to drink and even to water their gardens.

Kawo was not exempted from the colonial discriminatory scheme in the supply of water. The increase in population and the establishment of industries, various establishments, inevitably increased the demand for portable water. The colonial authorities provided some taps in this area but it only worked for few hours and with severe contamination and at times there was shortage of water. On the whole, throughout the colonial period the supply portable water for the African population in several areas within Kaduna and other towns in the country remained a problem in colonial Nigeria.
3.2 POLICY OF INFRASTRUCTURAL DEVELOPMENT UNDER REGIONAL GOVERNMENT

The creation of Regional Governments and the degree of autonomy granted to them by the 1946, 1960 and 1963 Constitutions in certain matters particularly those that were not on the exclusive lists was an important wisdom that paved way for the provision of infrastructure especially water. The 1946 Richard Constitution made provision for noninterference with purely regional legislation/administration. This important provision allowed the Regions to legislate over a variety of subjects within their areas of jurisdiction. The pedigree, socialization, the high sense of commitment to selfless community service by the leaders in the Northern Region made the provision of infrastructure particularly water supply possible. The wisdom was to leave behind legacy that subsequent leaders could build upon. As noted earlier, the goal of the colonial state for providing the infrastructure was to facilitate the consolidation of colonial rule and maximally exploit both human and material resources. However, at independence the general philosophy the leaders that took over the helm of affairs held was that basic infrastructure (health, electricity, water, education, transport, industries) occupy an important position in the development of any society. Hence, the Regional governments began to make concrete and practical attempts at addressing the fundamental problems of the citizens.11

The Northern Regional government under the leadership of Sir Ahmadu Bello, Sardauna of Sokoto, envisaged lofty goals for the development of northern Nigeria, which Kaduna form part. As noted elsewhere, Kaduna chosen to serve as the colonial capital of Northern Nigeria and the colonialists made concerted efforts to make their stay serenely and profitable one to the detriment of the African population, but the NPC government initiated bold policies for the benefit of all and sundry.12
Kaduna from the early 1960s continued to be one of the dominant forces in the political, social and economic activities. It should be noted that Kaduna after independence was still maintained as the capital of the Northern region, hence, making it a special place in the regional government for development. For instance, all those seeking employment either in the public institution or private firms, must come to Kaduna, no matter the nature of educational qualification\textsuperscript{13}.

Also, Sardauna when making statement on the role of Kaduna in comparison with other towns in the north in terms of industrial development stated thus:

\begin{quote}
My colleagues and I, attach the greatest importance to Kaduna. Not only as it should our capital contain our homes and our ministries, but also it is the centre of the north. As I said when opening a motor garage here strongly believe that Kaduna is the showroom for business in the whole of the northern region.
\end{quote}

The regional Government under the platform of the NPC excelled in the area of infrastructural provisioning not only in Kaduna but for the entire north. In Kaduna for example, the New Nigerian Development (NND) established in 1949, Barclays Bank Limited established in 1956, New Kaduna Hotel established in 1961, New Nigerian Newspaper established in 1966, Textile Mills Factory in 1956, General Hospital, Ahmadu Bello Stadium established in 1964, Nigerian Breweries in 1957 among others. In all of these developments, the Sardauna was a prime mover. He regarded the development of Kaduna as a reflection of northern values. His personal encouragement of the Sultan Bello Mosque to become a symbol of the transition from center of colonial administration to a northern capital\textsuperscript{14}.

Water supply gained higher priority during the period of the Regional government. In Northern Nigeria, government took over the fundamental and technical responsibility for developing new water schemes and also assigned supervisory high level manpower (Water Engineers and water
supply programmes. In its effort to ensure sufficient water aimed at addressing the acute shortage of the supply. Interestingly, this treatment plant is still a major supplier of water in the metropolis today.

3.3 CREATION OF KADUNA STATE AND REVITALIZING OF WATER INFRASTRUCTURE IN KADUNA METROPOLIS

To appreciate the link between creation of states and water supply in Nigeria, there is recourse to history on the trends in the State Creation in the country as well as sanitation/environmental degradation and diseases that it brought in its wake. According to Ashafa et al., the agitation and advocacy for state creation in Nigeria began in a manner as to alter the structure of the existing 3 Regions. In each Region there existed strong protestation and outcries against the arrangements based on the extant circumstances. The fears entertained by the agitators who were also minority groups were later discovered by the Will link Commission to be legitimate and genuine in each of the existing three Regions in the country. In fact, they felt matters would be worse for themselves (minorities) if independence was granted without restructuring the Regional arrangement, especially that their rights to self-determination could be sacrificed to expediency. Sequel to the creation of Mid-West Region in 1963 during the First Republic government, imbalance and outcries became widened and pronounced which constitute a new element in the political discord, anxiety and suspicion. By this time, the agitation for more states had come to acquire an additional justification to address the questions of when the Civil War became inevitable; the Gowon regime had to weight the strategic imperatives of States Creation as a weapon of war to weaken the strength of Biafran rebellion. Hence, 12 states were created in 1967 thereby breaking the overbearing Regions in 12 States and Capitals. The Murtala regime announced the creation of additional seven states on 3rd January, 1976. Though; it rechristened
the earlier ones due to the boundary adjustments that were effected to make the total of 19 States. Later in 1987, the Babangida regime created 2 additional states and in August 1991 additional 7 states were created by the same regime, bringing the total to 28 states. On 1st October, 1996, General Sani Abacha's regime created 8 states bringing the number to 36 States. It should also be noted that apart from the Mid-Western Region, the present state structure was the work of the military. The civilian governments no matter how benevolent lacked the political gut to create states. Suffices it to say, the creation of states have metamorphosed into an exercise to accommodate or alienate some major contending issues since it has remained an entirely elite affair\textsuperscript{16}.

The military regimes appoint military governors/administrators who submit their policies and projects to the Supreme Military Council (as the case may be) for approval. It is largely what this highest organ of government under the military want that their representatives in the state did. These governors/administrators equally engaged in rivalry and competition in the development of their states. They compare notes organizationally, but most importantly, they awarded contracts. Some contracts awarded apparently are beside, international donors (World Bank) and the United Nations agencies have shown and are still showing interest in the quantity and quality of water supplied to communities. The State that was able to pay its counterpart fund benefitted from such financial aid and assistance. But above all these, is the relationship between certain water borne diseases and the environment. As the saying goes 'Health is Wealth' states have come to realize the need to keep the environment healthy, to improve health status of their states. Heaps of garbage is thrown everywhere and in all places. When it rains they found their way to some open wells, streams, ponds and lakes from where the people get their supply of water. Consequent upon this, various diseases like cholera and guinea worm affect the people. Hence,
the best way out is to have not only a clean environment but to provide clean and safe pipe borne water supply\textsuperscript{17}. This is one of the most important reasons for the revitalization of water supply especially in Kaduna but the metropolis. Various administrations that have piloted the affairs of the State have made efforts to transform the water supply sector. From the administration of Brigadier Abba Kyari (1967-1975) to that of Alhaji Dr. Ahmed Mohammed Makarfi (1999-2007) there are several water supply programmes aimed at addressing the problem of the supply that were carried in the metropolis. Dams are constructed, chemicals supplied, treatment plants built, so also are storage tanks and pipes were laid to residential areas or designated locations with the establishment of the KSWB in 1971\textsuperscript{18}.

The provision of potable water in Kaduna metropolis in the Post-colonial era is essentially by the Government through the establishment of various Water Schemes from surface water sources (rivers and streams) scattered around, and through the drilling of boreholes. The Kaduna River and its tributaries are the major source of raw water as the Kaduna North and Kaduna South Water Treatment Works draws from the Kaduna River. The source of the Kaduna River lies in the Kujama Hills of the Jos Plateau. However, the development of potable water supply in Kaduna metropolis in the post-colonial period cannot be properly discussed without reference to the creation of Kaduna State Water Board (KDSWB) in 1971. The responsibilities of the KDSWB among other things is to produce and distribute water to the people of the State for domestic, commercial and industrial purposes, maintain the distribution system, operate and maintain the water works and dams in order to produce potable water to meet the ever increasing demand for water, and to collect rates for water consumed by customers. It is also responsible for advising and the formulation of policies designed to enhance the production of efficient and effective potable water in the state. In the early 1970s, the Water Board embarked on the
programme to increase the total urban water supply in Kaduna metropolis. To achieve this, new reservoirs were constructed at Tudun Wada, Barnawa and Kawo. However, boreholes and wells were constructed at Hayin Rigasa.19

The Governor of North Central, Brigadier Abba Kyari expanded the Malali Water Treatment Plants that supply water to Unguwar Rimi, Unguwar Sarki and other areas.20 The 1976 to 1980 development plan proposed another programme for an additional increase to some areas in Kaduna metropolis. However, during this period very little progress was made as most projects were stalled especially in Rigasa.12 It is imperative at this juncture to note that the World Bank (WB) has been providing assistance to Nigeria in the water supply sector since 1979. The first generation of assistance was directed at investments and strengthening institutions at the State level, especially since urban water supply is constitutionally a responsibility under Nigeria's constitution. Kaduna State was one of the beneficiaries in 1979, Lagos in 1989, Borno 1985, Anambra 1980.21 During the period, pipes were constructed that connected major areas in the metropolis. As a matter of fact, these pipes were popularly known as "World Bank".

Furthermore, the Second generation of assistance was in the form of loan of £256 million for National Water Rehabilitation Project (1991-2001), which targeted the entire country. In this regard, areas within the metropolis benefitted from the loan collected through the Kaduna State Water Board. The World Bank in its effort to ensure the supply of potable and sustainable water usually come with engineers in collaboration with the State water agency professionals for effectiveness. In early 1981, the World Bank (WB) and the Government of Kaduna State under Alhaji Abdulkadir Balarabe Musa parted ways because of what the Governor called "too much wealth generation". This was because of supply. He vehemently rejected all the terms of
reference for the loan and subsequently the WB removed all its assistance for water supply in Kaduna which affected the metropolis severely\textsuperscript{22}.

However, since 1979 when the State renewed its partnership with the WB, has become increasingly indebted to the Bank because of the exorbitant demands imposed by the Bank and is hardly meet up by both the State Government.

3.4 AREAS AND POPULATION AIMED AT SUPPLY

Table 1: Demand and Provisions as at 1991

<table>
<thead>
<tr>
<th>S/No</th>
<th>Areas</th>
<th>Population</th>
<th>Supply</th>
<th>Supply hours</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Bamawa</td>
<td>32,684</td>
<td>3,945</td>
<td>4hours</td>
<td>Insufficient</td>
</tr>
<tr>
<td>2.</td>
<td>Kawo</td>
<td>37,713</td>
<td>10,876</td>
<td>6hours</td>
<td>Insufficient</td>
</tr>
<tr>
<td>3.</td>
<td>Tudun Wada</td>
<td>60,299</td>
<td>9,455</td>
<td>4hours</td>
<td>Insufficient</td>
</tr>
<tr>
<td>4.</td>
<td>Rigasa</td>
<td>72,483</td>
<td>2,897</td>
<td>2hours</td>
<td>Insufficient</td>
</tr>
<tr>
<td>5.</td>
<td>Unguwar Rimi</td>
<td>52,717</td>
<td>32,976</td>
<td>7hours</td>
<td>Sufficient</td>
</tr>
<tr>
<td>6.</td>
<td>Unguwar Sarki</td>
<td>6,509</td>
<td>3,524</td>
<td>9hours</td>
<td>Sufficient</td>
</tr>
</tbody>
</table>

Source: Kaduna Metropolitan Water Supply Expansion Project

Table 2: Demand and Provisions as at 2005

<table>
<thead>
<tr>
<th>S/No</th>
<th>Areas</th>
<th>Population</th>
<th>Supply</th>
<th>Supply Hours</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Bamawa</td>
<td>54,211</td>
<td>12,300</td>
<td>4hours</td>
<td>Insufficient</td>
</tr>
<tr>
<td>2.</td>
<td>Kawo</td>
<td>87,557</td>
<td>27,000</td>
<td>6hours</td>
<td>Insufficient</td>
</tr>
<tr>
<td>3.</td>
<td>Tudun Wada</td>
<td>94,771</td>
<td>3,184</td>
<td>3 hours</td>
<td>Insufficient</td>
</tr>
<tr>
<td>4.</td>
<td>Rigasa</td>
<td>109,881</td>
<td>4,776</td>
<td>1 hour 45min</td>
<td>Insufficient</td>
</tr>
<tr>
<td>5.</td>
<td>Unguwar Rimi</td>
<td>76,356</td>
<td>34,950</td>
<td>9hours</td>
<td>Sufficient</td>
</tr>
<tr>
<td>6.</td>
<td>Unguwar Sarki</td>
<td>32,719</td>
<td>29,466</td>
<td>8 hours</td>
<td>Sufficient</td>
</tr>
</tbody>
</table>

Source: National Urban Water Sector Reform Project

Tables 1 and 2 show that water supply in these areas was grossly inadequate compared to the dire need or demand. This was in spite of huge sums of funds 'earmarked' for the supply. In 1992, KDSWB entered into a loan agreement with the WB for the provision of potable water supply in
the metropolis and institutional strengthening of the Board. Yet, water supply for the period under review remains a pipedream. However, acute shortage has been more pronounced in Rigasa, Tudun Wada, Bamawa and Kawo. In July 1994, officials from the World Bank visited Rigasa and Tudun Wada and proposed the construction of boreholes and wells to assuage the nasty state of affairs in these areas. It should be noted that the KSWB envisaged that the population of the metropolis will grow exponentially and will inevitably increase demand for the water. Former Kaduna State Commissioner of Water Resources, Kaduna State, Honourable Tsahiru Bako said that by 2035 the metropolis will shift from a moderate to severe water shortage area. Based on table 3 below, the demand for water will increase in the metropolis as 47% of the entire population of the metropolis lives in these areas.

3.5 METHODS OF WATER DISTRIBUTION IN THE METROPOLIS

The need to provide adequate pipe borne water in to every home in these areas (Barnawa, Kawo, Tudun Wada, Rigasa, Unguwar Rimi and Unguwar Sarki) is very paramount especially due to the increase demand for potable water as a result of the growing population and increase in urbanization. Three major types of water distribution networks systems are employed by the Water Works (Kaduna South Water Works and Kaduna North Water Works) in the metropolis. These are the:

i. Grid Iron System

ii. Grid System

iii. Free System or Loop Pattern
The first system eliminates dead ends and permits adequate circulation of water. It is draft on the main line or sub-line that permits drawing of water from other connected pipes in the network. It is mainly used by the KSWB in the distribution system of Kaduna metropolis. The second, grid system is developed to supply water to sub-settlements in the outskirts of Kaduna metropolis. The ribbon connection of pipes follows the primary arteries of roads and streets system in the areas under review. Whereas the free system or loop pattern is used to pump or supply to well planned or congested areas from at least two directions. Furthermore, the method of distribution has three main dimensions: the high density areas (Rigasa), medium density areas (Tudun Wada, Kawo and Barnawa) and low density areas (Unguwar Rimi and Unguwar Sarki). The low density areas have sufficient tap water supply in comparison to the two areas. Rigasa is not getting enough because it is located in a high density area. In 1999, KSWB conducted a research which revealed that only 1,000 people get water adequately and these people do not go beyond Abuja road. presently, people in Rigasa have to travel about 4 kilometers to get water either from tap or wells and boreholes.

3.6 CHALLENGES FACING THE DISTRIBUTION OF WATER SUPPLY IN KADUNA

The total domestic water needs in homes is at least 115 liters per day. The actual amount used may be greater depending on the ease and convenience of supply. According to the World Health Organization, 75 liters of water a day is necessary to protect against household diseases and 50 liters a day necessary for basic family sanitation. In Kaduna State, the per capital potable water supply in 1976 was 76.4 liters per day while average proportion for the whole State was 32.1%, but inadequate and 63% do not have access to water at all. As a result, the uses of alternative sources of water in the form of hand dug wells, boreholes, water vendors, pure water businesses and even streams are indispensable in these areas. However, the rampant
misuse of water in these areas is one of the major challenges towards sustainability of water supply as well as non-compliance with the directive\textsuperscript{25}.

In Kawo, the distance from the source of potable water is less than 200m while in Tudun Wada it is less than 78m. On the whole, only 26\% of the residents in these areas have water supply within their compound. Findings also revealed that 78\% of the water required in these areas is used for domestic activities.

In Rigasa for instance, Rafin Danmani which flows into various other parts of Rigasa have become a major source of water to most of the residents, who are relying, daily on it, even keeping vigil to scoop their domestic needs. They trekked down this stream for upward of 10 years due to constant shortage of water\textsuperscript{36}.

Generally speaking, water supply in these areas for the period under review is grossly inadequate. The inadequacy of the supply constitutes nuisance to the residents. No wonder some private individuals usually construct boreholes and wells to salvage the acute shortage of water supply, destroying of government owned-properties among others. However, the challenges that bedevil water supply in these areas are many from the agency saddled with its provisioning and the general populace. Among the challenges facing the Kaduna State Water Supply which hindered its ability to supply water sustainable include: obsolete equipment, erratic power supply, low tariff, insufficient water treatment chemicals, inadequate funding, inconsistency in policy formulation and implementation among others\textsuperscript{27}.
3.7 CONCLUSION

It is clear that social services or infrastructural provisioning throughout the colonial period was meant essentially to ensure the institutionalizing the colonial objectives of 'domination and dependence. The Chapter also examined the nature of water supply projects in Nigeria with emphasis on Kaduna as well as the trend and pattern of water supply in some areas of the metropolis during the colonial era revealing that it was discriminatory in purifying and distribution. However, the challenges faced include: obsolete equipment, erratic power supply, low tariff, insufficient water treatment chemicals, inadequate funding, inconsistency in policy formulation and implementation among others.
3.8 ENDNOTES


2. \textit{Ibid}


3. NAK/SNP/File No. 8067/S.I \textit{``Water Works Ordinance 1929, Amendments to 1930''}


6. \textit{Ibid}


9. \textit{Ibid}

10. E.O Oyedele, \textit{``Colonial Urbanization in Northern'' \ldots \ldots \ldots''} \textit{op cit, p. 299.}


16. M. Abdulmummin, (Engineer, Operation Department,) Kaduna State Water Board, interviewed at KSWB H/Q, 29th August, 2018


18. See National Urban Water Supply Reform Project, 1970

19. M. Abdulmummin, (Engineer, Operation Department,) Kaduna State Water Board, interviewed at KSWB H/Q, 29th August, 2018

20. Ibid


22. See National Urban Water Supply Reform Project, 1970


CHAPTER FOUR

IMPACT OF THE WATER SUPPLY IN KADUNA METROPOLIS

4.0 INTRODUCTION

This chapter has examined the general impacts of water supply in the Kaduna metropolis, with emphasis on the wards under study which includes Unguwar Sarki, Barnawa, Unguwar Rimi, Tudun Wada, Rigasa, and Kawo.

4.1. GENERAL IMPACTS OF WATER SUPPLY IN KADUNA METROPOLIS

4.1.1. WATER SUPPLIERS CHALLENGES

It was identified during the course of this study that water suppliers in peripheral settlements of Kaduna metropolis are broadly grouped into public sector providers (KSWB, Ministry of Water Resources, Local Government and Ministry of Works), private commercial and non-commercial providers.

The KSWB has been the principal water supplier of the public sector saddled with the responsibility of supplying water to all parts of Kaduna metropolis. This organization is responsible for the supply of pipe borne water metropolitan population. It also plans pipe borne water to extension to new areas putting into consideration return on investment and available financial resources at their disposal. It was explained by the KSWB that the growth of the peripheral settlement was sporadic due to push factors in the metropolis and pull factors of the peripheral settlements. The major problem confronting the KSWB is the low capacity of water treatment plants, which is currently less than the water demand of the metropolis, let alone the peripheral settlements. The next challenge is that of the dam supplying water to treatment plants.
The dam does supply required water quantity to treatment plants, especially in the dry season thereby indicating a need for an additional water dam\(^1\).

The Ministry of Water Resources and local governments are responsible for boreholes in parts of the metropolis where pipe borne water supply is not regular or exists. Boreholes serve as remedy to critical shortfall in pipe borne water supply. But public boreholes are poorly sunk and maintained in all the peripheral settlements of the metropolis\(^2\).

Private commercial providers contribute significantly to water supply in peripheral areas with accompanied financial gains. It was gathered through oral interview that commercial borehole owners sell water at N5 per container and make an average of N4,000 daily. This method functions effectively in Rigasa where water demand is high due to high population concentration and reliance on boreholes for water supply. The challenge of this supply is that when borehole breakdown and requires significant amount for repairs, it takes time for an individual to undertake repairs.\(^3\)

**4.1.2 HIGH WATER DEMAND AND POOR SUPPLY PATTERNS**

An important demand indicator for water in Kaduna metropolis is the quantity of water a person consumes in a household a day. Although the quantity of water used daily by a household depends on household size and income. It was established that families with larger size consumes water than those with smaller size. Analysis also reviewed a significant relationship between household income and quantity of water consumed daily by household.
4.1.3 ENVIRONMENTAL CHALLENGES

The site conditions in which the metropolis are located in poses serious challenge to the provisioning of pipe borne water infrastructure. Kano and Unguwar Sarki are located on a natively flat terrains, flood prune and hilly areas. These site conditions have cost implication when pipe borne water is to be extended.

The scattered nature of the metropolis is another environmental challenge. The metropolitan areas are not developed in on direction. The cost of extending main distribution pipe lines to on direction is less than what is required to serial directions. The location of the metropolis requires heavy capital instrument for installation of distribution network. This is explained by lack of land use plan and functional master plan for the metropolis which indicates direction of growth of basis for utility extension.

Although the need for an additional dam is established by the authority and ministry of water resource, to be constructed along Barnawa in order to prepare for their city expansion in the southern part of the metropolis. The river source in which water is to be drained into the earth dam when constructed still remains the major challenge⁴.

4.1.4 INTEREST FOR PIPE BORNE WATER SUPPLY

Since there is general dissatisfaction with current sources of water supply, the study went further to explore interest for pipe borne water. Household predominantly have interest in pipe borne water supply. The reason for high interest is because only Tudun wada that fully receives pipe borne water supply. High water demands as well as expensive nature of water purchased from vendors are reasons for high interest in pipe borne water. Residents equally have the understanding that payment of monthly water bills is by far cheaper than buying water from vendors. Dissatisfaction with the current sources of water supply further re-enforces interest for
pipe borne water. The level of dissatisfaction is higher in the dry season where water table drops too low sustain continuous water supply and if can be attributed to borehole ownership and irregularity of pipe borne water supply in parts of the metropolis that receives water supply.\(^5\)

**4.1.5 REGULARITY OF WATER BILLS TO AREA WITH PIPE BORNE SUPPLY**

This is explained through the application of data in regularity of water bills to areas with access to pipe borne water and willingness to pay water bills. If areas within access to pipe borne water gets water bills regularly, it is an indication of good lost recovery mechanism which will in turn ensure sustainable water supply. In an event where bills are not regularly or not issued at all, indicates poor recovery system.\(^6\)

The people of Kaduna are willing to pay water bills at 85.4 per cent. This suggests good prospect for sustainable water supply because water cost can easily be recovered. However, distribution of water bill is not generally not regular in peripheral areas that receives pipe borne water supply.\(^7\)

**4.2 ANALYSIS OF DIFFERENT ADMINISTRATIVE EFFORTS IN MEETING THE DEMANDS OF WATER IN THE METROPOLIS FROM 1960 TO 2005.**

From 1960, several governors and administrators that have piloted the affairs of Kaduna State have developed various approaches for the provision of water to the populace. The various administrators who have made some concerted efforts towards water supply in the metropolis.

Brigadier Abba Kyari 1967-1975 left indelible mark in water supply provision to the Metropolis. In early 1970, he embarked on a programme that increased the total urban water supply in Kaduna metropolis from 42 mld to 170 mld. He upgraded the Kaduna North Treatment Plant that supply to some parts of the area especially Unguwar Rimi, Unguwar Sarki and Kawo.\(^8\)

Also, the administration of Alhaji Abdulkadir Balarabe Musa impacted significantly on the provision of water supply in these areas. Initially, the administration rejected the terms of loans
from the WB and initiated bold policies to provide water. He expanded the Three Water Treatment Plants and constructed boreholes and wells especially in Tudun Wada, Kawo and Barnawa. As a matter of fact, some boreholes and wells are still pumping water though they need to be upgraded.9

Alhaji Muhammad Dabo Lere who governed between 1991 and 1993 also made concerted effort towards the supply of water. It rehabilitated the dilapidated equipment especially the reservoirs in Kawo, Barnawa and Unguwar Sarki as well as increased the volume of the water in the metropolis. Governor Hamid Ibrahim Ali’s administration 1994-1998 embarked on several water supply programmes which ameliorated the shortage of water in the metropolis. He also upgraded the reservoir in Tudun Wada and dug wells and constructed boreholes in Rigasa.10

The regime of Colonel Umar Faruk Ahmed sunk over N2.3 billion on water supply in the metropolis which ended up only in fenced project site, according to the records obtained from KSWB. All over the metropolis during the period, women and their children are seen as early as dawn of everyday, trekking long distances in search of water from contaminated sources. Projects initiated were reviewed over and over again, respectively, as they appeared in budgetary proposals with approvals, but none was executed. Lastly, the administration of Alhaji Ahmed Muhammed Makarfi 1999-2007 is central to the supply of water in the metropolis. Soon after assumption of office he embarked on a programme for immediate restoration of water supply in the metropolis which was seriously weakened, meanwhile many have lost hope that water will not run again in their houses. The administration spent N8.9 billion on water works particularly to address the instant need of the metropolis. He improved the capacity of Kaduna State Water Board (KSWB). Within the research areas, he drilled 52 boreholes which impacted positively on the residents. In fact, the World Bank (WB) gave him an award in 2004 awarded him for his
holistic approach towards sustainable water supply. He rehabilitated several reservoirs and boreholes.\textsuperscript{11}

4.3 CONCLUSION

This chapter has examined the impacts of water supply on the people of Kaduna metropolis, the impacts such as inadequacy of water supply, high water demand and poor supply patterns, environmental challenges amongst others, More so, the chapter made some analysis of different administration from the regime of Brigadier Abba Kyari 1967-1975, to the administration of Makarfi 1999 - 2007 and their efforts in meeting the demands for water.
ENDNOTES

1. Kaduna State water board: report on water supply, demand and challenges of Kaduna Metropolis. The Kaduna state official printers; 2012

2. Ibid


5. Ibid


10. Ibid


12. Rashida Usman, (House wife, 48 years,) interviewed at Rigasa, 21st August 2018
CHAPTER FIVE

SUMMARY & CONCLUSION

5.1 SUMMARY

This study is divided into five chapters. the first chapter, has examined the background of the study, statement of the problem, significance of the study, aim and objectives, scope and limitation, conceptual clarification, research methodology as well as literature review.

Chapter two looked at the geographical location of Kaduna State, the early people Kaduna State, the traditional political system of the people of Kaduna State whereby we discussed about farming, livestock production, fishing and hunting as well as trade. Chapter three has examined the historical background of water supply in Kaduna metropolis, the policy of infrastructural development under regional government creation of Kaduna state and revitalization of water infrastructure in Kaduna metropolis, area and population aimed at supply, method of water distribution in the metropolis as well challenges facing the distribution of water supply in Kaduna.

Chapter four has analyzed the impact of water supply on the people Kaduna metropolis how it affected their socio-economic standard living and also the effort of different administration in meeting the demands of water in the metropolis, from 1960-2005. Chapter five gives a brief summary of all the work and general conclusion of the study in collaboration with some advanced recommendation for development of water supply in the near future for the benefits of the state.
5.2 CONCLUSION

The role of water in modern society such as the urban centers of Nigeria cannot be People depend on its availability in quality and quantity for drinking, use in industry and for growing crops. This research work has highlighted dimensions of water supply in Kaduna form 1960 to 2005. And that despite the so called considerable attention paid to water supply and with the involvement of the World Bank in the provision of water in these areas over the years, portable and sustainable water supply has remained a mirage.

Our findings revealed that most of the people that have pipe-borne water in their houses are not satisfied with the nature of the supply while those that do not have any and relied on public water taps were subjected to serious problems. Some of the factors that have been identified as important controls on the demand for water in the study areas Include increase in population and changes in social tastes among others. Unfortunately, the Kaduna State Water Board saddled with the responsibility for water supply in the metropolis have not been able to meet the water demand and needs of the people due to inadequate power supply, dilapidated equipment, reckless over-consumption, misuse of water amongst others.

The study has also examined the extent which water supply can be developed and managed in order to have a safe, clean and sustainable water supply in these areas and the metropolis as a whole:

There should be provision of more alternative sources of water supply such as boreholes and public taps in strategic locations in these areas especially Rigasa, Tudun Wada, Barnawa, Kawo and some parts of Unguwar Sarki and Unguwar Rimi.
There should be proper arrangement with the Power Holding Company of Nigeria (PHCN) for adequate supply of power to the areas where Water Works are located. Proper maintenance of equipment at the water works should constantly be carried out as well as constant surveillance of the equipment. There should be constant repairs of damaged pipes and taps in order to reduce leakages and avoid contaminations thereby reducing water borne diseases. More funds should be allocated for water resources development by the government. For effectiveness with proper accountability from the State Water Agency and the Government, there should be public enlightenment campaign in the mass media against the reckless over-consumption and misuse of water.

There should be the adoption of water-efficient technologies and encouragement of economic activity that does not guzzle water.

Increase in population and improved standards of living should always be considered in projecting water demands.

Stakeholders, philanthropists and tycoons should also play their parts in the provision of water supply in their community in order to forestall sad experiences,

Any other matter that would positively guarantee clean, safe and sustainable water supply in these areas and the State as a whole is hereby recommended for good.
BIBLIOGRAPHY

Oral informants

<table>
<thead>
<tr>
<th>Serial No</th>
<th>NAME</th>
<th>AGE</th>
<th>OCCUPATION</th>
<th>PLACE OF INTERVIEW</th>
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<tr>
<td>1.</td>
<td>Aliyu Hayatu</td>
<td>63 years</td>
<td>Plumber</td>
<td>Tudun Wada</td>
<td>25/08/2018</td>
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<td>2.</td>
<td>Muhammad Abdulmurmin</td>
<td>52 years</td>
<td>Engineer</td>
<td>KSWB H/Q</td>
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<td>Kabiru Abdullahi</td>
<td>71 years</td>
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<td>UnguwarRimi</td>
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<td>Aminu Hamisu</td>
<td>81 years</td>
<td>Farmer</td>
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<td>6.</td>
<td>Jubair Tanimu</td>
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<td>Abubakar Hamza</td>
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<td>HayinRigasa</td>
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<td>8.</td>
<td>Habibu Abdullahi</td>
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<td>9.</td>
<td>Hamisu</td>
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<td>SabonGari</td>
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<td>10.</td>
<td>Sanusi Sirajo</td>
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<td>Rigasa</td>
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<td>12.</td>
<td>Hashiru Bako</td>
<td>57 years</td>
<td>Engineer</td>
<td>Barnawa</td>
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</table>

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