FLOOD MANAGEMENT OF NIGER-BENUE RIVERS IN THE COLONIAL ERA AND LESSONS FOR NIGERIA'S CONTEMPORARY ECONOMY

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Abstract

This paper examines the place of the River Niger in transport and power sectors in Nigeria. Transportation and power generation are pivotal to the economic development of the nation. Long before the development of other modes of transport, the Niger was the only highway between the north and the south. In advancing its colonial motive in Nigeria, the British government, after confirming the navigability of Niger from the Gulf of Guinea seventy years earlier by John and Richard Landers, exploited the river for transport services through agencies like the Marine Department which it established in 1900 and the Inland Waterways Department (IWD) after the dissolution of the former on the eve of Nigerian independence. The paper avers that despite the economic and administrative importance of the river to British colonialism, it gradually neglected it when other modes of transport like rail and roads were developing. The colonial authorities also handled the perennial problem of flooding on the waterway with laxity. Efforts to curb the annual problems of flooding by the Nigerian government after British rule was the damming of the massive water body for hydro-electric power stations in Jebba, Kainji and Shiroro. It is discovered that since the power stations were built, they had faced poor management leading to erratic power supply and loosely control of the river course. The paper therefore posits that the lackluster attitude of the government towards the management of the natural infrastructure for transport subsists in post independent Nigeria. It concludes that if the government had developed the existing dams and built more on the Niger, the problems of marine transport, electricity and unemployment would have been assuaged.

Key words: River Niger, Colonial Occupation, Hydro-electricity, flood

1. Introduction

The name Niger came from the Berber phrase ger-n-ger which means River of rivers, or a reference also to a big river. The River Niger is the second largest river in Africa with a length of 2600 miles. River Nile is the longest river in Africa and indeed, in competition with the Mississippi River for the number one position in the world. The Congo River and River Zambezi occupy the third and fourth positions in Africa. These rivers have over the years served as a network of transportation and communication during the pre-colonial and colonial periods. They served as major highways as there were no modern roads. Besides, there was danger of wild animals on the available footpaths because of pervasive thick forests. It is important however to point out that the place where road transportation was extensively used was the north of the Niger River where pack animals were extensively used in the pre-colonial era to conduct the Trans-Sahara trade. There, the danger of wild animals was at its ebb because of the desert. The peoples of this trade contact were namely Africans, Arabs, Maghrebs, Tuaregs, Hausa Fulani and Kanuris of North and West Africa.

The Niger River took its source from the Fouta Djallon Mountains in Guinea, West Africa, flowing northwards between Timbuktu and Gao in Mali area and then flows southwards towards geographical regions of Benin, Niger and Nigeria respectively (Mabugunje, 1971). It empties into the Atlantic Ocean at Burutu, Brass, Bonny, Eket, etc. Within the Delta area, it is characterized by numerous Ox-bow lakes, rapids and cataracts. Its estuary therefore became the pathfinder for European penetration into the hinterland, part of what was later known as Nigeria. The Niger is so important that two nations in West Africa got their names from the River; that is Nigeria, an appellation of "Niger-area" and Niger Republic. Therefor, the Niger is to Nigeria what the Nile is to Egypt, Sea to Britain, Alps to Switzerland, Congo to Congo Zaire, and Congo Brazzaville and Rubicon to Rome now Italy (Achoba, 2015). The importance of this great river to the people of Nigeria, Benin, Niger, Mali and the European occupation of the areas cannot be over emphasized. It was and still is a major network of inter-human and intergroup relations among the peoples of Nigeria

2. Statement of Problem

The yearning gap that informed this study is that not much has been written on its vital role in the generation of hydroelectricity energy. In addition, the abandonment of a proposed Dam on river Benue to checkmate excess flood from Lagdo Dam in Cameroon is a disservice to Nigerian State and a pressing issue to solve as it has always been a yearly disaster to the peoples and towns and villages

along the river Benue. This, many scholars have not given the attention it deserves. It is therefore against this background that this study examines the role of the River Niger in the British colonial occupation of the area which later became Niger-area (Nigeria) as well as its place in hydro-electricity generation.

3. Niger and Benue Rivers as a Means of Transportation and Communication

Transportation and communication enhance the movement of persons, commodities and ideas from place to place and among persons, and mediates the relationship and interactions that exists among individuals and communities (Anthony & Joseph, 2014). Right from the beginning of time, man has remained a locomotive animal moving from one place to another for exchange of goods and services. The constant issue of scarce human and material resources as well as the indispensable need for the exchange of goods and services has always explained the importance of transportation in human history. Transportation played a great role in laying the foundation for the discovery of agriculture and the sophisticated tradition of iron metallurgy. For example, early agricultural activities began with the movement of the early men in search of edible items (Anthony & Joseph, 2014). When the early man through his gyratory activities noticed the germination of already discarded seeds in his overgrown environment, he moved towards the direction. With the use of iron implements the Neolithic era, the adventurous ancestors of modern man were able to clear forest regions and through the use of their tools transformed these regions into farmlands while farm routes later grew into enlarged bush paths which were used by primitive communities. To enhance the movement of people from place to place, during the pre-colonial, colonial and even the post-colonial era, the River Niger played a great role.

The Niger River and its tributaries served as the major sources of energy protein in terms of provision of fishes' protein for the peoples around the rivers as well as the hinterland peoples. As side from that, other food crops such as beans, sorghum maize, millet, and cow-pea were also grown in such rich alluvial area. Meanwhile, the marshy parts along the rivers facilitated the cultivation of vegetables, such as okra, tomatoes, pepper, waterleaf, spinach, punchy, curry leaf and so on. This was done at both subsistence and commercial levels. The extension of annual flooding of the Niger, Benue and Anambra rivers to the swampy and low land Savannah area, enhanced cultivation of varieties of rice (Achoba, 2015).

The cultivation of yam along the lower Niger area was in late November to late January when flood must have recede, whereas the upland plantation was usually from late February to March especially after the first rain of the year. This

was to enable the seedling grow, instead of drying for lack of water. The harvest of all the hitherto mentioned species of yam was usually at the beginning of flood season, when the rivers started to overflow their banks after seven to eight months of cultivation. The proceeds were usually transported home and markets through the rivers. Thus, the pre-colonial wealth of an Igala man was to a great extent determined by the quantity of yam he had in his barn (Achoba, 2015).

The so called discovery of the mouth of rivers by Lander Brothers was not true to the world but to the West as there were native peoples of Ijo and Itsekiri origin who were always at the mouth of river Niger doing their fishing occupation. Thus, the River Niger facilitated civilization as a major network of interaction and served as a major source of transportation of raw materials and other goods to and from Nigeria via the Atlantic Ocean during the pre-colonial, colonial and post-colonial eras. At the colonial period, there were a lot of trading companies on the Niger, such as Royal Niger Company, John Holt, United African Company among others. These trading companies relied heavily on the Niger as their means of transporting goods via the Atlantic Ocean. Similarly, all other countries that have the River Niger pass through them used it as their major source of transportation and trade. This was so because, it was difficult to actually get direct footpaths leading from some places to other places; the available footpaths were dangerous due to the existence of wild animals. This made water transportation via the Niger an important means of transporting people and goods.

During the pre-colonial and Colonial periods, Nigerian rivers served as carriers of trade. River systems served as a major part of communication and carriers of trade and ideas in the past than they do in the present time. Before the coming of highways, railways and airways, rivers provided the only thoroughfares for the cheap transportation of large quantities of commodities over long distances in many parts of Africa. The presence of major rivers like the Niger and Benue as well as other inland waterways such as streams, estuaries and creeks paved the way for water transportation. Pre-colonial Nigerian peoples promoted the efficacy of water transportation through the dredging of rivers, streams and creeks to make them navigable by canoeists. European explorers, traders, missionaries and soldiers were attached to the Nigerian coastal waters because riverside communities engaged themselves seriously in the material development of water transport.

In the absence of roads and railways, the initial efforts at transport development focused on dredging southern Nigeria's inland waterways to render them navigable all year round by river vessels drawing at least five feet of water. This opened the river basins for direct exploitation by British traders. Through the

trade enhanced by the River Niger, communities were able to get access to essential goods. For instance, people could move to riverside communities for the purpose of buying riverside commodities such as salt, fresh fish, periwinkles and European manufactured goods. Therefore, the existence of the River Niger enhanced communication, transportation and further promoted friendly relations among communities.

After the end of First World War, reservoirs were built by the English engineers close to the right bank of the Niger River at its major confluence area with River Benue. These were basically used to store oil and gas for the distribution of energy in some parts of Africa around rivers Niger and Benue (Pedraza, 1960). It was also to supply fuel to deport at Gangue via 500 miles up the Benue in the French Cameroons (Pedraza, 1960). This was an evidence of strong tie between the British and the French. The huge oil storage tanks built at Lokoja, the confluence town of the river Niger and Benue was because Benue was the main route to the hinterland parts of Cameroon from Nigeria during the colonial period. The great general demand after First World War necessitated the construction of huge metal tanks to boost transportation. Today however, tanks have been abandoned though, it remained intact. This is supposed to enhance energy distribution if the Niger-Benue waters are navigable for oil vessels.

3 Management of Drivers of Flood in Niger-Benue Rivers

3.1. Climate change: Seasonal changes of surface pressure during the wet season which gives fast flow of air mass from the Atlantic Ocean brings about massive rainfall. In other words, the south-east trade wind is responsible for rainfall. At this period, the sea is warm and releases water molecule into the atmosphere which later comes down as rain through the south-east trade wind. Regular fall of this rain gets the earth saturated with water and becomes flood. Though there is no regular rainfall in place like northern Nigeria but the volume is very high when it rains compared to the amount of rainfall in the past. Climate change is therefore the major cause of rainfall in Nigeria. In this case, there is need for regular cleaning of water channels, so that the heavy water down pour can drain easily in readiness for another rain fall. Should these channels such as gutter, sanitary lane be unavailable, the community or government agencies like the town planning offices should ensure such provisions are made and maintained. In addition, availability of forest reserve will serve as reservoir for flood which can mitigate climate change.

3.2. Farming Activities: Farming along the bank of the Niger and Benue Rivers and other big rivers can cause soil erosion. This happens when the roots of grass and trees that supposed to hold the soil together are cleared for farming; the soil becomes loose and easily wears away into the river during heavy down pour. In addition, this will consequently increase the shallowness of such river and its shallowness leads to excess flood during its annual over flooding as the water spreads easily across its bank up to the neigbhouring towns and villages. Thus, this becomes one of the drivers of flood in Nigeria. It is therefore important to note that farming along the banks of these rivers should be vegetables such as spinach, pumpkin leaf, pepper, tomatoes among others. In other words, crops that grow like grasses whose roots can still hold the soil together after harvesting should be planted.

3.3. Availability of many Tributaries: The river Benue alone has over nine rivers as tributaries which carry a lot of waste into it. This distorts the easy flow of water ways and culminates to flooding of the environments. Within the Niger Delta, River Niger, has over thirty-one distributaries or outlets. Some of these outlet and distributaries during wet season have strong current that carry a lot of debris and waste into the Niger River as in the case of river Benue. This therefore enhances sluggish flow of water current. Thus, the water current will spread its ways beyond the banks of the Rivers Niger and Benue with ease. There should be regular dredging and clearing of waterways as in the days of colonial era to allow free flow of river current.

3.4. Unavailability of Good Drainage System and lack of Town Planning: Absence of drainage or poor drainage system can cause flood in our environment couple with this is when there is no good planning that provide way for free flow of water during heavy rainfall can lead to flood. Town planning is therefore very important to urbanisation of any settlement or city in the world. Its absence makes any area to loose such status. Private fence in every compound that distorts flow of water should be discouraged. Each street should have adequate gutter to dispose excess water to its proper channel. In addition, interlocks block of compound should be encouraged against German floor. This is to enable compounds to absolve some water during rains.

3.5. Overgrasing of Niger-Benue Green Belt Areas: Overgrazing can lead to soil degradation as it exposes the soil to erosion. Whereas, erosion removes soil top layers into the rivers and thereby makes the river shallow which facilitates

flood during the annual raining season. To ameliorate this problem, there should be ranches where cattle are kept in confined places and fed. This will enhance dairy provision of milk for the teeming population of Nigeria. As the nomadic life of cattle makes them dehydrated and reduce their production of milk. Milk as a bye-product of animal husbandry will enhance food security (Achoba & Apine, 2017). Aside from the above, it affects agriculture as it destroys the fertility of the soil top layers by exposing it to excessive heat.

3.6. Inadequate Dams with Large Reservoirs: There are three dams on the river Niger. There is none on the Benue River to control the flood water from the Lagdo Dam in Cameroon. This is no doubt a major driver of flood from the river Benue. Thus, there should be a minimum of three dams on the Benue River in Nigeria with large volume of reservoirs. At the confluence of rivers Niger and Benue another dam should be built to checkmate the volume of flood on the lower Niger River. By and large, the numbers of dams in Nigeria are grossly inadequate to meet up with flood control.

3.7. Lack of Dredging and Clearing of Rivers Highways: The sandbars at the middle of rivers Niger and Benue should be cleared as well as the water hyacinths. Whereas, government should intensify to dredge the main rivers Niger and Benue with provision of water embankment to protect the shoreline to an extent. Dredging properly Channel River's course and as such enhance strong current. However, absence of it makes the river especially Niger to change course overtime. In the course of this, many villages in the lower Niger that did not have natural barriers such as rocky cliffs have been eroded into the Niger thereby leading to evolution of new settlements. Whereas, in the colonial time the Niger River was being dredged regularly, there was no such displacement of villages.

3.8. Man's Interaction with the Immediate Environment: Immediate environment here refers to our compound and surroundings. When we alter the bare floor and green areas that supposed to receive excess flow of water during heavy rain, it bounces back to some residential areas. The advantage of this green areas and keeping of garden in our compound help in the oxygen we breathe in and the carbon dioxide we exhale as a result of the emission of chlorophyll from the garden and the green areas. We altered our compound bare floor by German floor, concrete floor and heavy interlocks. Hence the soil surface that should suck

water during rainfall is no longer there, rather flows and flood lower residential areas.

4. Colonial-Era Flood Management Policies and Practices on Niger/Benue Rivers

Colonial-era flood management policies and practices in Nigeria, particularly regarding the Niger River, were shaped by the broader objectives of the British colonial administration, which prioritized economic exploitation, infrastructure development, and political control over the needs of local populations and environmental sustainability (Nwokedi, & Obodo, 1993).[10] While colonial flood management efforts were not as comprehensive or advanced as contemporary practices, there were notable attempts to mitigate the impact of flooding to facilitate trade, protect infrastructure, and ensure colonial interests. During the early stages of colonial rule, the British administration had a limited understanding of the seasonal flood patterns of the Niger and Benue Rivers. These rivers, which experience significant annual floods during the rainy season, were essential for trade and transportation, particularly for transporting goods such as agricultural products and minerals (Nwokedi, & Obodo, 1993). However, the unpredictable nature of flooding posed a challenge to the colonial government's efforts to establish and maintain reliable trade routes. The colonial authorities conducted basic hydrological surveys to better understand the river systems and their flood cycles. However, much of the response to floods during this period was

However, much of the response to floods during this period was reactive rather than proactive, with little emphasis on long-term flood prevention or management. Floods posed a significant threat to colonial infrastructure, especially transportation systems like roads and railways. The British administration sought to mitigate these impacts through engineering projects, such as road and railway embankments. Flood-prone areas saw the construction of embankments and elevated roadways or rail lines to prevent them from being submerged during heavy floods (Picouet, Hingray, & Olivry, 2001). This was crucial for maintaining trade routes that were vital to the colonial economy. In addition, river ports and navigation were also involved. The colonial administration invested in building river ports and controlling the navigability of the Niger River (Picouet, et al, 2001).

During periods of flooding, the rivers became navigable deeper inland, which was beneficial for trade. However, the colonial authorities did little to address the destructive nature of floods on riverside communities, focusing more on maintaining navigation for economic purposes. Flooding along the Niger and

Benue Rivers was both a blessing and a curse for agriculture (Picouet, et al, 2001). While the annual floods provided fertile silt deposits, they also destroyed crops and disrupted agricultural cycles. The colonial government recognized the economic importance of agriculture, especially cash crops like groundnuts, cotton, and palm oil, and took some measures to protect farmlands. Basic drainage systems were developed in certain agricultural areas to channel excess floodwater away from farms. However, these efforts were limited and often only targeted areas that were economically significant to the colonial administration. Toward the later years of colonial rule, there were efforts to integrate irrigation systems into flood-prone agricultural areas (Picouet, et al, 2001). These early irrigation schemes were designed to regulate water levels for crops while managing excess floodwaters.

While there were efforts to manage the immediate impacts of flooding, the colonial administration did not invest in large-scale flood control infrastructure such as dams or levees. This was largely due to the high costs associated with such projects and the colonial government's focus on maximizing short-term economic gains. Moreover, the colonial administration often relied on traditional knowledge and practices of local communities, who had developed coping mechanisms for seasonal flooding over centuries. By the early 20th century, the British colonial government began to recognize the importance of scientific data collection to understand and manage the Niger River's flood patterns. Hydrological surveys were conducted to study the river's seasonal fluctuations, sedimentation, and flow rates (Nwokedi, & Obodo, 1993). This data was used to inform the construction of infrastructure like bridges, roads, and river ports, ensuring that they could withstand seasonal floods. However, these surveys were often limited in scope and primarily focused on areas of economic importance to the colonial administration, such as the Niger Delta and regions near Lagos and Kano (Yang, Khan, Xie, Ringler, Ogilvie, Seidou, Djibo, Weert, & Tharme, 2018).

The broader environmental and social impacts of flooding on local communities were generally not a priority for the colonial government. In the later stages of colonial rule, particularly in the 1940s and 1950s, the British administration established river basin authorities to manage water resources more effectively (Yang, et al, 2018). These authorities were tasked with overseeing the use of river systems, including flood management, irrigation, and transportation. Their primary concern was to maximize the economic utility of rivers like the Niger and Benue for the colonial economy. However, these river basin authorities were largely under-resourced and lacked the capacity to implement large-scale flood control projects. Their efforts were more focused on facilitating navigation

and irrigation rather than addressing the broader environmental and social consequences of flooding.

5. Role of Flooding in Colonial Transportation Infrastructure Development

Flooding played a significant role in shaping colonial transportation infrastructure development in Nigeria, particularly in areas surrounding the Niger River. The British colonial administration relied heavily on these rivers as major transportation routes for trade, especially for agricultural and mineral products. However, the seasonal flooding of the rivers posed both opportunities and challenges, influencing how transportation systems were developed.

Flooding during the rainy season made the Niger River deeper and more navigable, enabling larger boats and ships to transport goods farther inland (Grove,1972). This was crucial for the movement of goods from rural areas to coastal ports, such as Lagos and Port Harcourt, for export. The colonial administration, therefore, capitalized on the natural flooding patterns to facilitate riverine trade, making rivers key components of Nigeria's transportation infrastructure during the colonial era. In response to the challenges posed by flooding, colonial authorities built elevated roads, bridges, and railway embankments to ensure transportation routes remained operational during flood seasons. These elevated structures were designed to withstand seasonal inundation and protect key trade routes. For instance, railway lines, particularly those connecting the hinterlands to major ports, were constructed with embankments to prevent flooding from disrupting transport operations (Nwokedi, & Obodo, 1993). While rivers became more navigable during floods, road and rail networks often suffered damage due to waterlogging and erosion, particularly in flood-prone areas. The colonial government invested in constructing more durable infrastructure in these regions, but maintenance costs were high due to recurring flood.

6. Niger River and Hydro Energy Generation during Colonial Era

The Niger River has long been recognized as one of West Africa's most important natural resources, particularly for hydroelectric power generation. The colonial and post-colonial eras saw different approaches and impacts concerning hydro energy generation from the Niger River in Nigeria. During the colonial period, European colonialists primarily viewed rivers like the Niger as transportation routes to facilitate the export of resources. While some colonial infrastructure development occurred, it was largely for the benefit of the colonial economy rather than for the development of local industry or energy needs. The colonial

focus was not on hydroelectric development for local power. Colonial powers prioritized extractive industries and transportation, so while the Niger River was recognized for its potential in hydropower, major investments in hydroelectric plants did not occur.

Toward the late colonial period, British colonial administrators recognized the river's hydroelectric potential. Feasibility studies and proposals were conducted, particularly in the 1950s, setting the stage for post-independence development. However, no major projects were implemented during colonial rule. In 1968, after Nigeria gained independence, the Nigerian government completed the Kainji Dam on the Niger River, marking one of the first major post-colonial investments in hydroelectric power. Funded partly by international organizations, Kainji Dam became a crucial power source, supplying electricity to various parts of the country. Subsequent projects followed, including the Jebba and Shiroro dams, which were completed in the 1980s. These developments aimed to harness the Niger River's potential more fully to meet Nigeria's growing energy needs. Despite the initial success of these projects, maintenance has often been inadequate, leading to reduced efficiency and frequent power shortages. The lack of reinvestment and upkeep has limited the power output from these hydro facilities.

Although, these dams have been advantageous, the construction of dams has caused significant environmental changes, affecting local communities that rely on the river for fishing, farming, and transportation. Seasonal flooding was also disrupted, impacting agricultural cycles. These effects have led to conflicts over water resources and local displacement. In recent years, there has been renewed interest in optimizing and expanding Nigeria's hydroelectric capabilities along the Niger River. With increased focus on sustainable energy, the government has explored rehabilitation projects for aging infrastructure and considered smaller-scale hydropower projects to improve rural electrification.

In summary, while colonial powers did not fully exploit the Niger River's hydroelectric potential, the post-colonial era saw Nigeria's government invest significantly in hydroelectric dams to meet national energy needs. The development has had both positive and negative impacts, providing essential electricity yet causing environmental and social challenges. Modern efforts aim to address these challenges and maximize the river's potential for a sustainable energy future.

7. Niger and Benue Rivers as a source of Hydroelectricity Energy

One of the major indices of development in the world is the provision of stable electricity. Thus, the Europeans after their industrial revolutions have always referred to Africa as a dark continent. Therefore, it's important in facilitating or enhancing industrial growth job creation, better life forurban and rural dwellers cannot be overemphasized. The first project in Nigeria started in Lagos by British Colonial administration in 1896. By 1946, it metamorphosed to power work department. However, major power Generation Company started as Electricity Corporation of Nigeria by the colonial government in1950. In the post independent period, a River Niger Power Dam Authority was established on 25th of November 1964 by an Act of Parliament.

The search for more power generation led to the establishment of Decree 24 of 1974 of which gave birth to the Nigerian Electricity Power Authority (NEPA). All assets previously owned by the Niger Dam Authority which operated the Kainji, were all merged into this new nucleus called NEPA which is a public limited company. In Nigeria, the major watershed in power revolution was the establishment of Parliamentary Act of 2005. By this, electricity was privatized to a great extent which transformed NEPA to the Power Holding Company of Nigeria (PHCN).

The river Niger helps to generate electricity which powers the states and the federal capital territory through dams. Its reservoir is Lake Kainji in Niger State of the Nigerian federation which got its name from river Niger. Kainji Dam is the largest of the three dams or reservoirs. It is one of the largest and most important dams in Nigeria generating electricity. It consists of 11/041 KV electrical distribution network. The dam comprises the main concrete gravity dam with earth embanked dams on either side of the main and saddle dams, which closes a secondary valley, and two gates. The main dam is 550m long with a maximum height of 64m. It is made up of water intakes, spillway and abutments.

The powerhouse is located downstream of the dam, on the right bank, and at right angles to the water intakes. The reservoir, which forms Lake Kainji, is 136 km long and has a capacity of 15 BCM (Billion cubic meters). Kainji powerhouse is equipped with eight turbine-alternator units including four Kaplan turbines rated at 80 MW each, a further two Kaplan turbines rated at 100 MW each, and two propeller turbines rated at 120 MW each. The available head ranges between 23.8 m and 41.2 m according to the water level in the reservoir. The original Kainji HPP project considered 12 turbine units, only eight units have been installed. The required civil structure is in place for the remaining 4 units. The project has

multiple purposes, which include energy generation, flood control and navigation. The design capacity of the power station is 750 MW.

The dam has operated for approximately 45 years and wear and tear (cavitation's pitting, slight abrasion, other small damages to blades and wicket gates, surface condition, etc.) has reduced the effective efficiency of the turbine by approximately 2.0% compared to the efficiency level of the 'as built' condition, which gives an estimated current turbine efficiency of approximately 91.3%. The aim of the rehabilitation is to re-establish the rated power output of 750MW of the hydropower scheme of Kainji until the end of November 2018. Depending on the performed refurbishment works and taking into consideration the current condition of the units, an increase in efficiency of 1% to 3% is targeted at present, the units 1G11 and1G12 show a much better hydraulic performance. It can therefore be assumed that units 1G7 to 1G10 can be upgraded to at least a similar efficiency level of 94.3% by replacing and modifying the hydraulic 'sensitive' parts. MESL's rehabilitation programme will mainly focus on units 1G7, 1G8, 1G9 and 1G10. Jebba Dam also located in Niger State contributes to hydroelectric power generation in Nigeria. Jebba is a town that is across both Kwara and Niger State of Nigeria. It has a very strong hydroelectric house but not as much as that of the Kainji Dam. The Jebba Dam comprises an earth and rock-fill dam wall and several auxiliary dams. The main dam is 670m long and 42m high, and has a capacity of 3.22 BCM. The main dam is located approximately 100 km south of the Kainji Dam and is followed by a lock and three auxiliary concrete dams as dams 4, 3 & 2. Between these auxiliary dams there is an emergency concrete spillway and powerhouse with water inlet. The spillway and auxiliary dam 1 is rock fill with earth core similar to that of the main dam. A saddle dam, of the same type as the main dam, closes a secondary valley. The powerhouse is equipped with six turbines and six turbine-alternator groups. Each of the propeller turbines is rated at 96.4 MW for a net head of 102 MW at maximum output. The total nominal power installed is 578 MW.

The Shiroro Dam is also located in Niger State. It began operation in 1999. It is located at the Kaduna confluence of the Niger River. As at now, the Shiroro station has the capacity of 600 megawatts.

Conclusion

From the above, it is obvious that along the Niger River and its tributaries, a lot of villages and towns evolved from the upper and the lower Niger in Nigeria. Among these in Nigeria are Borgu, Zungeru, Jebba, Kainji, Moye, Lokoja, Gbobe, Ajaokuta, Ogoli, Idah, Agenebode, Anegbete, as well as some Ibaji Local Government villages, Ojigono, Ebu, Onitsha, Burutu among others. Along the

Benue, Loko, Moju, Makurdi, Wukari, Ibi, Yola and so on. The river Niger played great roles during the pre-colonial and colonial era in what is known as modern Nigeria. This is because within these periods, the river was a major highway or network of interaction, transportation between Nigeria and other parts of the world.

The river aided communication, commerce and agriculture. Those who lived around the river Niger used it for agricultural purposes such as irrigation. They also fished in the river, thereby providing the people with their source of protein. The river further shaped the people's outlook and became a major means of civilization. More so, the river Niger served as a means of power generation and other forms of energy. It is rather unfortunate that despite the great roles played by the river Niger as a means of transportation, communication and promotion of friendly relations among various societies, the government has till did not paid the necessary attention to the river. From the analyses of this paper, it is important to note that paying attention to River Niger will enhance the growth of Nigeria. Therefore, the study recommends that the government should pay necessary attention to River Niger as an important channel of communication, transportation, hydroelectricity among several others.

In addition, the river is indeed the germ of modern Nigeria as it is the deed of the past that makes the present. In spite of the forgoing important role of the Niger River, it is also a disaster to so many people of Nigeria in recent times, especially during its annual over flooding arising from climate change. This is to an extent due to the failure of the government to dredge the river and build water embankment as well as planting of adequate trees to prevent erosion and mitigate climate change. In addition, the abandoned proposal of the Nigerian government to build a reservoir dam in River Benue close to Cameroon to check the Lagdo Dam in Cameroon is a major factor responsible for excess flood along the Benue and by extension the river Niger it feeds.

References

Achoba. F. (2015). Impact of Rivers Niger, Benue and Anambra on socio-economic development of pre-colonial Igala society. *The Nigerian Journal of History*, 3(2),123

Achoba F. & Apine, M. (2017). *Farmers/pastoralists conflict in Kogi, Benue and Nassarawa States in Nigeria, 2009-2016* in Ibrahim S, Defence, security,

economy and development in Nigeria, Bayi and Dalila publishers London. 1(1), 274

Adoghe, A. U. Odigwe L. A. & Igbinovia, S. O. (2009). Power sector reforms-effects on electric power supply reliability and stability in Nigeria. *International Journal of Electrical and Power Engineering*, *3*(1), 36-42

Anthony N., E., & Joseph D. (2014). Pre-Colonial transport systems: A veritable instrument for Inter-Group Relations amongst Owerri Igbo Communities in Nigeria and Their Neighbours *International Journal of Development and Management Review (INJODEMAR),9*(1)1, 217-224.

Boladei G., (2023). The apogee of national service and vission for the Nigerian power sector: reflections on the life and times of Engr. Joseph Oyeyemi Makoju. Being a lecture delivered at the inaugural Engineer Makoju Annual Lecture Series at Federal Uiversity Lokoja, 11th April, 2023

Gross, F. (1966). *World Politics and Tension Areas.* London: University of London Press& New York: New York Press. 1966, 313

Mabugunje L. A. in J.F. Ajayi and Michael Crowder (eds)(1979). *The Land and Peoples of West Africa.* Longman London.

Nwokedi, G., & Obodo, G. (1993). Pollution of the River Niger and its main tributaries. *Bulletin of Environmental Contamination and Toxicology, 51*(2), 282-288.

Olise C. G. (1990). *A Kingdom of the Lower Niger Valley (1640-1900)*. Pacific College Press.

Okoro, O. I. (2011). Power sector reforms in Nigeria: Opportunities and challenges, *Journal of Energy in Southern African*, 3(2), 52-57

Picouet, C., Hingray, B., & Olivry, J. (2001). Empirical and conceptual modeling of the suspended sediment dynamics in a large tropical African river: the Upper Niger River basin. *Journal of Hydrology*, *250*(1), 19-39.

Yang, J., Yang, Y., Khan, H., Xie, H., Ringler, C., Ogilvie, A., Seidou, O., Djibo, A., Weert, F., & Tharme, R. (2018). Quantifying the sustainability of water availability for the water food energy ecosystem nexus in the Niger River Basin. *Earth's Future, 6*(1)*,* 1292-1310.