

Historicizing the Impact of Aquatic Resources and Water Bodies on National Development: A Survey of the Nigerian Situation.

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Abstract

Economic historians, development experts and social scientists are in agreement that the periods before and after colonial rule in Nigeria have been characterized with abundant marine resources and water bodies such as rivers, lakes and coastal areas that can effectively serve as veritable tools for sustainable socio-economic development. Regrettably, Nigeria's rich aquatic and marine resources seem not to be adequately harnessed due to chronic neglect of the economic potentialities of these aquatic resources by successive Nigerian governments that depend mainly on petro-dollar driven economy. This study seeks to explore different ways water bodies have shaped the historical development of the people of Nigeria dating back to the pre-colonial and colonial times especially in the sphere of Euro-Nigerian trading relationships. The study spot-lights the roles played by navigable river systems like the Niger as it appertains to trade and social intercourse amongst diverse people of Nigeria as well as the expansion of Euro-African trade after the discovery of the Niger river. Equally, crucial roles played by water bodies in terms of agricultural practices, settlement patterns and marine transport were interrogated in the context of this research endeavour. The study x-rays the impact of aquatic resources and water bodies on the social, economic, cultural and political development of the Nigerian state. The study intends to excavate monumental challenges that plaque the marine resource sector due to Nigeria's government neglect of the economic potentialities of the sector. Finally, this study submits that adequate policy thrusts on effective utilization of aquatic cum marine resources by the Nigerian government can engender adequate management of aquatic resources for sustainable national development.

Keywords: Aquatic Resources, Water Bodies, Socio-Economic Development and National Development.

Introduction

Nigeria, a nation endowed with an extensive array of water bodies boasts of an impressive total water resource base, comprising 215 billion cubic meters of surface water and 87 billion cubic meters of groundwater. The country's coastline stretches for approximately 853 kilometers, with a 15-kilometer inland extension in Lagos. Four primary hydrological basins - the North Central Plateau, Western Highlands, Eastern Highlands, and Uri Plateau - serve as the source of most Nigerian rivers. Notably, the Niger and Benue rivers, the country's two major waterways, converge and empty into the Niger Delta, one of the world's largest and most significant river deltas. These water bodies, however, have played significant roles in shaping the history of Nigeria, from pre-colonial times to the present day. The country's geographical location that encompasses lakes and

coastal areas has made water a crucial factor in the development of its societies, economies, and cultures. To this end, the aquatic resources in Nigeria encompass a diverse spectrum of physical features that include rivers, lakes, wetlands, and marine environments. These resources are essential not only for providing food and livelihoods, but also for supporting economic activities such as agriculture, fisheries, transportation and tourism.

Historically, water bodies have been an integral part of the cultural and social fabric of Nigerian communities, influencing trade routes, settlement patterns, and even governance structures. The Niger and Benue Rivers, as well as various lakes and coastal regions for instance, have contributed significantly influenced the social, economic, and political landscape of the Nigerian state. These rivers and lakes have been the sources of agricultural activities through irrigation and provision of water necessary for crop production. In Nigeria, numerous irrigation schemes rely on rivers and lakes thereby facilitating year-round farming and enhancing food production. The various irrigation schemes contributed significantly to the high level of food production in Nigeria, particularly the areas within the Niger basin and the northern parts of the country, where irrigation farming is prevalent. Little wonder that the north is known as the food basket of the Nation (Oluwumi & Salami, 2012). Apart from irrigation farming, Nigerian rivers served as carriers of trade during the precolonial period. Ajayi and Alagoa (1980) opine that river systems have played tremendous part as means of communication and carriers of trade and ideas in the past than they do in the present time.

Dike and Iwuji (2023) reiterated that the trade relations between the Efik and Mbembe and other ethnic nationalities of Ogoja province during the pre-colonial era were known to have been facilitated through the Cross-River basin of which the chief trading items included yam and fish. However, before the coming of highways, railways and airways, rivers provided the only thoroughfare for 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, rivulets and creeks paved the way for marine transportation. Pre-colonial Nigerian people promoted the efficacy of marine transportation through the dredging of rivers, streams and creeks to make them navigable by canoeists. Olarenwaju (1986) avers that European explorers, traders, missionaries and soldiers were attracted to the Nigerian coastal waters because riverine communities engaged themselves seriously in the material development of marine transport. Accordingly, Olarenwaju asserts further that:

In the absence of roads and railways, the initial efforts at transport development centered around dredging southern Nigeria's internal water ways to render them navigable year around by river crafts drawing at least five feet of water. This opened the river basins for direct exploitation by British traders (Olarenwaju, 1986, p.1)

Although riverine communities like Egbema and Oguta had access to the Atlantic coast, the hazards of canoe transportation affected border trade and population movements. For instance, canoe transportation remained insecure due to the presence of river animals like crocodile. The canoeists can be ambushed by local creek pirates who intercepted river boats for the purpose of robbing market men and women. In another development, many economic historians are in agreement that most communities in the Owerri-Igbo area are situated in upland areas which made contact with coastal middle-men traders very difficult. During the precolonial period, Nigerian rivers served as carriers of trade. Ajayi and Alagoa (1980) highlight that river systems probably played much large part as means of communication and carriers of trade in past than they do in the present time. Before the coming of highways, railways airways, rivers provided the only thorough

fares for the cheap transportation quantities of commodities over long distances in many parts of Africa. Corroborating the viewpoints of these economic historians, Nkwocha and Dibia (2014) affirm that:

the absence of extensive river networks like the Niger and Benue in and around Owerri never posed serious barriers to trade and inter-group relations. They assert that many traders from Owerri-Igbo enclave especially the communities of Agbala, Obibi-Ezena, Emeabiam, Eziobodo, Ihagwa and Okolochi forded across the Otamiri river into towns like Mgbirichi, Umuagwo from where they entered into Ikwerre-etche, Ijo (Ijaw) and Efik areas for the purpose of buying riverine commodities such as salt, fresh fish, periwinkles and European manufactured goods (p.222).

Experts in marine resources opine that integrated aquacultural practices, such as fish farming alongside crop cultivation, have become increasingly popular, exemplifying the interdependence between aquatic resources and agriculture. However, the sustainability of these water bodies is increasingly threatened by human activities and environmental changes. This paper therefore seeks to survey the dynamics surrounding aquatic resources in Nigeria, focusing on their historical significance, contemporary challenges, and future prospects. This research endeavour seeks to answer the following thought-provoking questions. Is it true that the pre-colonial times and contemporary era influenced aquatic resources on Nigeria's national development? To what extent do water bodies and aquatic resources promote agriculture, fishing, and trade and hydro-power? What is the cultural importance of aquatic resources in community's identity and heritage? How can aquatic resources be harnessed to encourage tourism and national development?

Conceptual Clarifications

Aquatic Resources

These refer to the various biological and non-biological materials and organisms found in aquatic ecosystems, including oceans, rivers, lakes, and wetlands. These resources include fish, shellfish, aquatic plants, and other marine life that can be harvested for food, recreation, and economic purposes. Additionally, aquatic resources encompass water itself, as well as minerals and other materials found in or on the seabed. The sustainable management of these resources is essential for maintaining biodiversity, supporting livelihoods, and ensuring the health of aquatic environments (Food and Agriculture Organization [FAO], 2018)

Water Bodies

These refer to any significant accumulation of water, typically on the Earth's surface. This term encompasses various forms of water resources, including, lakes that domesticate large inland bodies of standing water. Rivers that include bodies of water that usually drains into larger bodies like lakes or oceans. Equally, Ponds constitute aspects of water bodies that house smaller shallow bodies of still water. Similarly, wetlands include areas where water covers the soil or is present near the earth surface during some periods of the year, including swamps and marshy areas while, oceans and seas constitute extensive bodies of saltwater that cover a major portion of the Earth's surface. Critically, water bodies are crucial for ecosystems, providing habitats for countless species, supporting human activities, and influencing climate and weather patterns. According to the United Nations Environmental Programme [UNEP], (2016) these water bodies play significant roles in transportation, recreation, and local economies.

National Development

This refers to the process by which a nation improves the economic and social conditions of its citizens. This typically involves enhancement of quality life, reduction of poverty and promotion of economic growth as well as sustainable development. Key aspects of national development include; Economic Growth that increases the Gross Domestic Product (GDP) thereby creating jobs for unemployed youths. In the same vein, economic growth also creates room for qualitative education, improves healthcare services and living standards thereby ensuring improved economic well-being of the population. Infrastructural development as an aspect of national growth builds and maintains sustainable transportation, communication, and utility systems to support economic activities and improve accessibility among national communities. Another veritable instrument of national growth is environmental sustainability which ensures that development meets the needs of the present without compromising the ability of future generations to meet their own needs in terms of natural resource management. Similarly, political stability as a crucial aspect of national development establishes effective governance structures, rule of law, and democratic participation to ensure stability and institutional leadership and followership. Ultimately, national development aims to create an equitable, prosperous, and sustainable society for all citizens (United Nations Development Programme [UNDP], 2020).

Theoretical Framework

This study is anchored on the Ecological Web Theory postulated by McNeill examines how natural environments, particularly water bodies, have shaped human societies and historical developments. It emphasizes the interdependence between ecological systems and human activities, reflecting on how rivers, lakes, and wetlands have influenced agricultural practices, settlement patterns, and trade routes (McNeill, 2003). Similarly, Tuan's theory, "Humanistic Geography" or "Topophilia" in support McNeill's view point highlights the significance of landscapes, including water bodies in shaping human experiences and cultural expressions. Furthermore, Tuan's explanation focuses on the ways in which water bodies shape cultural identities, social structures, and spiritual beliefs. Tuan (1977) holds that ecological Web Theory explores how communities interact with their aquatic environments, which often serve as sources of inspiration, mythology, and artistic expression. Graeber (2011) further intersects Ecological Web Theory by establishing the interconnectedness between water bodies and socio-economic wellbeing of human societies, both in the past and present. He examines the economic roles of water bodies in local and regional economies, as well as how fishing, transportation, and trading activities associated with rivers and lakes which have contributed immensely to improved living standards of human societies (Graeber, 2011).

Orientalism and Post-colonialism Theory

Said (1999), in his theory on "Orientalism and Post-colonialism" postulates how colonial policy thrust on water bodies shape modern perceptions of culture and identity, which can be applied in the context of Nigerian water bodies. Corroborating this, Berkes (1978), in his book *Sacred Ecology: Traditional Ecological Knowledge and Resource Management*, highlights the importance of traditional ecological knowledge (TEK) and indigenous practices related to water management. It seeks to recognize and advocate for the integration of Nigerian water bodies into contemporary environmental policies. Orientalism and Post-colonialism Theory examines Nigeria's aquatic heritage and the historical significance of water bodies by drawing on ecological

and indigenous knowledge towards better understanding of the multifaceted roles of aquatic environments in Nigeria's past and present.

Historical Perspectives of Aquatic Resources in Nigeria

Early settlements and civilizations, such as Nok and Benin cultural heritage, emerged around water bodies such as rivers and lakes, which are utilized for agriculture, fishing, and trade. Rivers like the Niger, Benue, and Cross River have contributed immensely on these settlements and civilizations. They have facilitated transportation, commerce, and cultural exchange between communities as mentioned above. Water-based spiritual beliefs and practices developed, with many ethnic groups revering water deities and associating water with fertility and prosperity (Afigbo, 1972). For instance, before the advent of colonial rule, Nigeria was home to numerous ethnic groups and cultural backgrounds. Water bodies, notably the Niger River and its tributaries, were vital lifelines for pre-colonial societies where they served as routes for transportation and trade. The Niger River, one of Africa's longest rivers, played a crucial role in facilitating intra- and inter-regional trade among the various kingdoms such as the Hausa city-states, the Yoruba kingdoms, and the Kingdom of Benin (Nwankwo, 2017).

In trade patterns and economic activities, the presence of water bodies fostered the development of trade networks. The Niger River served as a conduit for goods, including salt, textiles, and agricultural produce, linking the northern and southern regions of Nigeria. Scholars like Oloidi highlighted the importance of waterways to other parts of West Africa and beyond. According to Oloidi (1990), the waterways trade not only enhanced economic prosperity but also encouraged cultural exchanges, leading to the amalgamation of different customs and traditions. Additionally, Water Bodies also serves as cultural identity to indigenous people who believe and practice rituals as a way to appease their gods. Water bodies in Nigerian areas to this end, are often imbued with cultural significance. Many ethnic groups regard rivers, lakes, and other water sources as sacred and integral to their cosmologies (Oloido, 1990). For instance, numerous festivals in Nigeria celebrate aquatic resources. A good example of such is the Argungu Festival in Kebbi State, which is renowned for its fishing competitions, drawing participants and spectators from across the country and beyond. Such events promote cultural heritage, strengthen community ties, and enhance local tourism (Bala & Sani, 2022).

Corroborating this, Idowu (1962, p.78) states that “water-based spiritual beliefs and practices developed, with many ethnic groups revering water deities and associating water with fertility and prosperity”. Similarly, Ajayi (2019) cited a vivid example of the Osun River, which he said was central for the Osun-Osogbo festival, which celebrates the goddess of fertility and is a key event for the Yoruba people. Such cultural practices highlight the integral relationship between water bodies and the identity of Nigerian communities.

Historically, water bodies have also influenced migration within and outside Nigeria. The availability of fresh water and fertile land attracted migratory patterns, particularly during periods of drought or famine. Ethnic groups often settled along riverbanks, resulting in settlements that evolved into cities. These migrations have contributed to the demographic diversity of the country and facilitated the exchange of ideas and cultural practices (Ikporukpo, 2009). Apart from migration which has contributed immensely towards exchange of ideas and cultural practices, pre-colonial era facilitated transport systems in Igboland. For instance, during this era, aquatic transportation system aided internal slavery and the Trans-Atlantic slave trade via bush-path, inland water-ways and creeks. In Owerri-Igbo area for instance, slave dealers traveled through,

inland waters and creeks. They also traveled through bush-paths from Owerri to Avu which was a popular slave market centre. From Avu, the slaves were marched through communities like Umuokanne, Obiti up to Kalabari area from where slaves were finally taken to Igwe Ocha (Port Harcourt) for shipment to Europe or the Americas via the Atlantic Ocean (Oral Interview with Osuji). When the Avu slave market was closed down, a prominent chief of Akabo by name Njoku Nwanshi discovered another slave route through Nekede to Umuodu in Owerri Nshi Ise. From Umuodu the slaves were transported to Mgbirichi via the Nwaorie River for the middle passage across the Atlantic (Ngoka, 1998).

Water bodies have also contributed significantly during the colonial era. During the colonial period, European colonizers exploited Nigeria's water resources for transportation, trade, and economic gain. This taking over of aquatic environment by European colonizers briefly disrupted traditional ways of life. For instance, the construction of dams, canals, and ports altered water flows, affecting agriculture, fishing, and settlement patterns. The British colonial government leveraged on Nigeria's water bodies for administrative control and resource extraction (Igbafe, 1979). Within this period, the rivers not only became essential routes for transportation of goods and communication as well as the strategic positioning of ports such as Lagos and Calabar. This development allowed the colonial administration to exploit the resources of Nigeria, while imposing new socio-economic structures (Ogunremi, 2018) Resistance and adaptation to colonial policies often disrupted traditional livelihoods tied to water resources. For instance, fishing communities faced challenges due to the introduction of commercial fishing practices by colonial authorities (Nwosu, 2014) However, the resilience of these communities often led to adaptations in fishing techniques and resource management strategies.

After gaining independence in 1960, Nigeria sought to redefine its national identity. Water bodies continued to play a crucial role in this process, influencing political boundaries, resource allocation, and regional development initiatives. According to Oni (2016), the Niger River Basin Development Authority (NRBDA) was established to manage water resources and promote socio-economic development in the region. Today, Nigeria's water bodies remain critical for economic activities such as agriculture, fisheries, and tourism. The government has recognized the potential of economic growth, leading to initiatives aimed at improving infrastructure and access to these water bodies. For instance, investments in irrigation projects have sought to enhance agricultural productivity in riverine areas (Ogunleye, 2021).

The Importance of Aquatic Bodies to National Development in Nigeria

The utilitarian values of aquatic resources to the Nigerian state are many and varied. These values are extensively outlined below:

Social Impact

Nigeria, as a nation, is endowed with aquatic bodies, including rivers, lakes, and coastal areas. Many of these rivers and lakes are located within the Nigerian environment. The largest and most significant as mentioned previously is the River Niger, which rises from the Futa-Jallon highland in the Republic of Guinea and empties its water into the Atlantic Ocean through Nigeria (Nkwocha, 2012). Most states in Nigeria always take their names after many important rivers in Nigeria. These rivers include, cross river, Anambra, Imo, Ogun and Osun and so on. Water bodies play a crucial role in the country's social and environmental landscape, especially on various sectors such as agriculture, transportation, tourism, fisheries, and overall economic growth. The nation as we

know is blessed with several major rivers as mentioned in the previous sub-headings, Niger River been the third-longest river in Africa, has been a crucial freshwater resource but has drastically shrunk in recent years due to climate change and upstream water usage. The country also boasts of a long coastline along the Gulf of Guinea, which facilitates maritime trade and fishing activities.

Economic Impact

In the field of agriculture and food security, aquatic resources contribute significantly to Nigeria's agricultural sector, which employs substantial portion of the population. Fisheries play a critical role in providing protein and supporting local economies. Fisheries are a vital component of Nigeria's economy, providing livelihoods for millions and contributing significantly to food security. Nigeria's fishing industry encompasses both artisanal and industrial sectors. Art local fishermen using traditional methods, while industrial fishing involves more advanced technologies and larger vessels. According to the Food and Agricultural Organization (FAO), Nigeria is one of the largest fish producers in Africa, producing approximately 1 million metric tons of fish annually. The major fish species caught include tilapia, catfish, and sardines. However, the country still faces a deficit in fish supply, leading to increased imports to meet domestic demands (FAO, 2020).

According to the Food and Agricultural Organization (FAO), aquaculture is an essential component of food security in Nigeria, accounting for a significant share of domestic fish consumption. Nigeria, endowed with a diverse range of aquatic resources, plays a significant role in the economy of Africa. The vast network of rivers, lakes, and coastal areas not only supports biodiversity, but also forms the backbone of economic activities such as fisheries and aquaculture, transportation, trade routes, tourism and recreation. This research work explores these three key areas to highlight how Nigeria's aquatic resources contribute to economic development while also addressing sustainability challenges. In aquaculture development, aquaculture has emerged as a viable solution to the declining fish stocks and increasing demand for fish. According to FAO (2020), the Nigerian government has recognized the potential of aquaculture and has implemented various policies to promote its growth.

Aquaculture production in Nigeria has seen significant growth, with to its high market demand and relatively low production costs. The National Aquaculture Strategy Document outlines plan to increase aquaculture output, improve feed production, and provide technical support to fish farmers (Adebayo, 2020). However, there are challenges, including poor infrastructure, limited access to credit, and inadequate technical knowledge among farmers (NPA, 2021). The fisheries and aquaculture sectors also contribute significantly to Nigeria's Gross Domestic Product (GDP) and provide employment opportunities. According to World Bank report of 2021, the fisheries sector alone employs over 2 million people, providing direct and indirect employment (Echefu & Akpofure, 2024) Moreover, the aquaculture sector has the potential to alleviate poverty and enhance food security by investing in sustainable aquaculture practices. Nigeria can not only meet domestic fish demand, but also position itself as an exporter of fish and fish products in the international markets (Gikandi, 2011).

Water bodies have impacted greatly in spheres of marine transportation and trade routes. It serves as natural highways that facilitate trade and transportation, both nationally and regionally. The Niger River, for instance, is vital for transporting goods from inland areas to coastal ports, enhancing trade opportunities. Maritime activities at Nigeria's ports, such as Lagos and Port Harcourt, are also crucial for the nation's economy, contributing to job creation and economic

diversification. Inland waterways are essential for transportation and trade in Nigeria, particularly in regions where road infrastructure is major transportation routes for goods and passengers. The Nigerian Inland Waterways Authority (NIWA) has been working to develop and maintain these waterways to facilitate trade and reduce congestion on Nigerian roads (Baird, 2019).

The use of barges and boats for transporting bulk goods, including agricultural products and raw materials are becoming increasingly popular. This mode of transportation is not only cost-effective but also environmentally friendly, reducing the carbon footprint associated with road transportation. Nigeria's extensive coastline and port facilities, such as the Apapa and Tin Can Island ports in Lagos, play a crucial role in international trade. The ports facilitate the import and export of various goods, including crude oil, agricultural products, and manufactured goods. According to the Nigerian Ports Authority (NPA), the ports are pivotal for generating revenue for the federal government and creating job opportunities. Coastal shipping also facilitates fishing industry by providing access to local and international markets for fish and seafood products. The development of coastal shipping routes can enhance trade efficiency and reduce transportation costs for aquatic resources (NPA, 2021).

Aquatic resources offer immense potential for tourism development, thereby improving the foreign exchange earnings of the Nigerian state. Scenic lakes, rivers, and coastal areas attract both domestic and international tourists, contributing to revenue generation and employment. Projects aimed at enhancing ecotourism can harness the beauty of Nigeria's water bodies while promoting conservation efforts (Eze, 2018). Water bodies in Nigeria also contribute to energy production, notably through hydroelectric power plants. Dams constructed on major rivers, such as the Niger and Benue, generate electricity vital for industrial and residential use. According to Nigeria Electricity Regulatory Commission (2022), the Kainji Dam and Jebba Dam are examples of infrastructure that underscore the significance of aquatic resources in national energy needs.

Cultural Impact

Water bodies in Nigeria Rivers, lakes, and other aquatic ecosystems are not merely physical entities; they are woven into the fabric of Nigeria's culture, spirituality, arts, and identity. Traditional beliefs and practices, representation in arts and literature, festivals and rituals are associated with water bodies. In areas of traditional beliefs and practices or spirituality and cosmology, many Nigerian ethnic groups, revere water as a sacred element vital to life and spirituality. Rivers, particularly, are often seen as the dwelling places of deities and spirits. For instance, the Niger River, one of the longest rivers in Africa, holds immense cultural and spiritual significance among many communities. It is often personified and worshipped as a deity, influencing the spiritual cosmology of ethnic groups living along its banks (Gikandi, 2011).

The Yoruba people, for example, believe in the goddess "Oshun", which is associated with the Oshun River in Osun State. According to tradition, Oshun is the goddess of fertility, love, and fresh waters, embodying the essence of beauty and prosperity. Offerings are made to her to seek blessings in various aspects of life, including health and fertility (Sango, 2004) Such practices underline the belief that water bodies are not mere resources; they are vital components of the community's spiritual landscape. In aspect of healing and purification, Water is also central to healing practices among various Nigerian communities who believe in the curative properties of specific water bodies, particularly rivers known for their healing qualities.

Additionally, purification rituals involving water are prevalent in many cultures. In Igbo land generally for example, water is used in numerous rites of passage such as birth, marriage, and

mourning to symbolize cleansing and renewal. The act of washing away impurities symbolizes spiritual rebirth and the acceptance of new beginnings. In connection to ancestry and identity, Water bodies serve as markers of identity and ancestry for many communities in Nigeria (Obi, 2005). The Eri River in Enugu State is celebrated for its supposed healing abilities. Local inhabitants often travel to bathe in its waters, seeking relief from ailments or emotional distress (Ugochukwu & Nwankwo, 2015). They draw lines not only on maps but also within the narratives of peoples' lives. Rivers and lakes often shape the historical consciousness of communities, reinforcing their attachment to the land and heritage. For instance, the Niger Delta region is more than just a geographical area; it is a cultural milieu shaped by the intricate relationship between its people and the numerous waterways that crisscross it (Akwaji, 2017).

Moreover, the ancestral belief systems in many Nigerian societies are steeped in the practice of ancestor veneration, where water bodies become sites of remembrance and homage. These practices underscore how geography, spirituality, and cultural heritage intertwine in the collective consciousness of Nigerian ethnic groups. Water Bodies in Arts and Literature are symbolism and metaphor, Water has been a prominent motif in Nigerian arts and literature, emblematic of life, resilience, and fluidity. Writers such as Chinua Achebe incorporate themes related to water bodies to evoke a sense of place and identity. Achebe's works often feature rivers and streams as symbols of continuity and change, reflecting the struggles and aspirations of the Nigerian people (Achebe, 1958). In Soyinka's poetry, water frequently serves as a metaphor for time. For instance, a shuttle in the crypt, he uses imagery of rivers to articulate the complex realities of life in Nigeria, particularly in relation to colonialism and independence. Through these literary devices, water bodies emerge as rich sources of narrative and meaning (Soyinka, 1972).

As a visual arts representation, the significance of water bodies extends into visual arts, where they are depicted as integral to the cultural ethos of various Nigerian communities. Artists use water in their work to symbolize cultural heritage, environment, and human existence. The vibrant paintings of renowned artists, such as Ben Enwonwu, often depict the beauty of water bodies while highlighting their importance in everyday life (Okeke-Agwulu, 2015). Furthermore, traditional crafts, such as pottery and weaving, frequently draw inspirations from water motifs. Many artisans reference local water bodies, incorporating their forms and movements into patterns and designs, which serve both aesthetic and functional purposes. Nwokedi (2017) holds that in oral traditions and folklore water plays a crucial role in preserving the cultural significance of water bodies.

Political Impact

Water bodies served as veritable instruments for the birth of modern states such as Nigeria. The incursion made by European explorers like Mungo Park, Richard and John Lander who discovered the mouth of the Niger in 1830 culminated in the birth of modern Nigeria. Equally, the discovery of the point where river Nigeria flowed into the Atlantic Ocean spurred other European traders, missionaries and colonizers to infiltrate into the Nigeria area thereby paving the way for the era of colonial imperialism, missionary enterprise in the Nigeria area. However, rivers such as the Niger and Benue are not just physical entities; they are intertwined with the histories and identities of the people living along their banks. Traditional practices, festivals, and rituals are often centered on these water bodies, fostering a sense of community political tradition and culture as well as socio-political continuity (Adeleke, 2001).

Many riverine communities have developed unique political traditions and culture values as evidenced in pre-colonial societies like Benin (Edo), Osomari, Oguta and Onitsha etc. These

communities share similar political culture. For instance, Western Igbo communities borrowed Benin monarchical, court traditions and titles. A political pilgrimage to Benin through the Niger River became among some of them, an act depicting rising states and it would appear such pilgrimages were at times undertaken for the reasons of political education by persons aspiring to political office (Afigbo, 1987). Critically, the Niger River and its deltaic nature has been blamed for the Eze Chima methodology that traced the origin of Onitsha to the medieval kingdom of Benin. This account insisted that the leader of this group was Eze Chima, who settled at Agbor from where he moved to Obior, where he and one of his sons, Oreze led the Benin immigrants across the Niger to found Onitsha (Uchendu, 1965).

However, the Ezechima myth has been criticized by Uchendu, a renowned anthropologist while trying to come to terms with the claims of Onitsha's Benin ancestry. Uchendu's views are quoted extensively by Ikelegbe (2019) thus:

Onitsha, Oguta and the Ezechima group of villages who claim affinity with Benin, and who have their kingship institutions, as evidence of descent, their eponymous ancestor- Chima- an Igbo name conclusively demonstrated that the Ezechima people were not Benin but Igbo speaking people once under the political domination of the Benin kingdom (p.123).

Aquatic resources can influence national security dynamics and plays significant roles in delineation of boundaries of nations states. Disputes over maritime zones and resources can lead to tensions with neighboring countries. Thus, the management of these resources is crucial for maintaining territorial integrity and fostering diplomatic importance of various nations states where these aquatic resources are domiciled (Ikelegbe, 2019).

Environmental Impact

A vivid analysis of the global ecosystem as it appertains to environmental health, pollution, climate change, and water resource management shows that Nigeria is endowed with a rich diversity of ecosystems, particularly its water bodies, which play a crucial role in supporting both terrestrial and aquatic life. However, these invaluable resources face numerous environmental challenges, including pollution, climate change impact, insufficient regulatory frameworks on the part of the Nigerian state which depicts serious neglect of aquatic resource management by successive Nigerian governments has impacted negatively on Nigeria's water bodies and it ecosystems. These ecosystems which include the Atlantic Ocean, major rivers such as the Niger and Benue, and numerous lakes and wetlands are vital for biodiversity, supporting numerous species of fish, amphibians, birds, and plants (Dumont, 2009).

In the biodiversity assessment, the biodiversity within Nigeria's water bodies is significant. The Niger River Basin, which covers a substantial part of the country, is home species of fish, Wetlands like the Hadejia-Nguru wetlands serve as crucial habitats for migratory birds and various aquatic species. However, these ecosystems face threats from human activities. Overfishing, habitat destruction, and the introduction of invasive species have severely impacted the biodiversity of Nigeria's aquatic environments (Abowei & Ekwelemu, 2010). Additionally, land-use changes and urbanization result in the loss of wetlands, which are essential for water purification and flood control. In ecosystem services however, healthy ecosystems provide essential services such as water filtration, flood regulation, and carbon sequestration. For instance, mangroves along Nigeria's coastline protect coastal regions from erosion and provide nurseries for fishery stocks. Pollution is one of the most severe challenges affecting Nigeria's water bodies, industrial

discharges, agricultural runoff, and domestic waste contribute to the degradation of water quality (FAO, 2018).

Challenges Facing Aquatic Resources in Nigeria

There are many challenges facing aquatic resources in Nigeria. Some of them are;

Pollution: Although Nigeria is endowed with abundant water resources, the country struggles with effectively managing its water supply in a sustainable manner. Due to economic water scarcity, Nigeria requires substantial investment and enhanced management strategies to meet its water needs. According to 2021 estimates, Nigeria's total annual water demand stands at approximately 5.93 billion cubic meters, with projections indicating a significant increase to 16.58 billion cubic meters per year by 2030, highlighting the urgent need for improved water resource management (Uba & Owor, 2024). Despite the significance of aquatic resources in Nigeria as mentioned above, there are still numerous challenges. For example, in recent decades, Nigeria has faced significant environmental challenges, including pollution and over-exploitation of water bodies. Pollution is another critical challenge affecting aquatic ecosystems in Nigeria. Industrial waste, agricultural runoff, and urban sewage discharge contaminate water bodies, compromising water quality and threatening aquatic life. The Niger Delta region, in particular, suffers from oil spills, leading to devastating ecological consequences and impacting on the communities that rely on these water bodies. The impact of oil spills in the Niger Delta exemplifies how industrial activities have threatened aquatic ecosystems and the livelihoods of local communities (Uba & Owor, 2024).

The petroleum industry in Nigeria has a major source of pollution in the Niger delta region. For example, the oil industry, significantly concentrated in the Niger Delta, was said to have caused severe maritime and freshwater pollution, and has devastated the Niger delta environment, contaminating waterways and soil (Nwilo & Badejo, 2006). Another one is the agricultural runoff, these very one is caused by the use of fertilizers and pesticides in agriculture, leading to nutrient loading and chemical contamination in rivers and lakes, contributing to eutrophication, which depletes oxygen levels and harms aquatic life (Emi *et al*, 2015).

Urbanization: Nigeria's rapid urbanization and industrialization is also a source of challenge, it has led to increased water pollution, degradation of aquatic ecosystems, and conflicts over water resources. Water-borne diseases like malaria, typhoid and cholera impact greatly on public health. The country's economic development has been hindered by inadequate water management, leading to food insecurity, health issues, and environmental degradation (Okoro, 2014). Efforts to harness water resources for hydroelectric power, irrigation, and domestic use have been ongoing, with varying degrees of success. Efforts to address these environmental issues have also underscored the need for sustainable management of water resources. Another most pressing challenge facing Nigeria's aquatic resources is overfishing (Adejuwon, 2006). Unsustainable fishing practices threaten fish populations and, consequently, the livelihoods of countless individual's dependent on fishing. Reports indicate that illegal fishing and the use of harmful techniques have led to significant declines in various fish species (Abdullahi, 2020).

Climate Change: Climate change is another challenge that poses a substantial risk to aquatic resources. Altered rainfall patterns, rising temperatures, and increased frequency affect the availability of freshwater resources. Rising sea levels also threaten coastal areas, leading to erosion and loss of habitat. These challenges pose a significant threat to Nigeria's water bodies, affecting the health condition and the communities that rely on them. However, change in precipitation patterns is a major contributor to climate change. Climate change has altered rainfall patterns in

Nigeria, leading to increased flooding and droughts (Omer, Elhadi & Abdalla, 2019). Flooding events can overwhelm drainage systems, leading to water contamination and loss of habitats (Adelekan, 2010) conversely, prolonged droughts exacerbate water scarcity, threatening both livelihoods and biodiversity. Another one is rising temperature which can affect the thermal dynamics of water bodies and also impact on aquatic organisms' survival and reproduction (Muoatcho *et al*, 2017).

Climate change threatens fisheries by altering fish distributions and productivity. Changes in spawning conditions and habitat availability may lead to reduced fish stocks, directly impacting on food security for many Nigerian communities that depend on fishing. Apart from climate change, another source of worrisome situation on water bodies is the failure of governance and lack of coherent policies on climatic change. Thus, the recurrent failures on the part of governmental institutions across different tiers undermine efforts to manage aquatic resources sustainably. Corruption, insufficient funding, and inadequate enforcement of environmental regulations also hinder effective management strategies (Ayodele, Ogunjuyigbe & Odunlami, 2020).

Prospects for Aquatic Resource Management in Nigeria

Despite litany of challenges that plaque the aquatic/marine resource sector in Nigeria, there are considerable prospects for improving the management of aquatic resources in Nigeria.

Promoting Aquatic resource management through viable government policies

First and foremost, aquatic resource management in Nigeria can be sustained through viable government policies such as fisheries management. Thus, viable government policies on sustainable fisheries management practices can boost fish production. This management includes establishing catch limits, promoting aquaculture, and educating fishermen on sustainable practices. Apart from educating fisherman on sustainable practice, there is also need for stakeholder's engagement, which would involve participation of local communities in management decisions that can lead to better compliance and outcomes. To encourage a sustainable fisheries management in Nigeria, one should first look at the complexities and challenges faced in the country's aquatic resources. The outcome of the encouragement will enhance a holistic approach to managing fisheries that balances ecological health, economic viability, and social equity. The country should emphasize on the importance of preserving aquatic ecosystems. They should advocate for the establishment of marine protected areas (MPAs) to safeguard biodiversity and support fish populations. This involves understanding the life cycles of various fish species and the habitats they depend on. Furthermore, implementing measures to combat overfishing is crucial. For instance, (FOA) report suggested adopting catch limits based on scientific assessments and promoting responsible fishing practices to ensure long-term sustainability (FAO, 2000), there is no gain saying the fact that the federal government plays crucial role in the promotion of aquatic resource management that generate enough revenue for the national economy. Considering, the importance of aquatic resource to national development, there is needs for the different tiers of government namely, federal, state and local government to help Nigerian riverine communities towards establishing fish industries. These fish producing communities should partner with relevant authorities in ensuring compliance and reduction of illegal fishing activities. Equally, the three tiers of government should create regulatory agencies that will empower local fisheries management committees for greater efficiency.

Sustainable fisheries can contribute significantly to local economies, providing livelihoods and food security. The researchers advocate for strong governmental policies and adequate funding to support habitat restoration efforts. This includes the establishment of protected areas, enforcement of regulations against illegal fishing, and incentives for sustainable practices. Effective policies can create an enabling environment for successful restoration initiatives. Nevertheless, monitoring and evaluation of restoration of habitats is important. This is to ensure that restoration efforts are effective to emphasize the necessity of continuous monitoring and evaluation. This should involve setting clear metrics for success and adapting management practices based on outcomes. Regular data collection can inform stakeholders about the health of restored habitats and guide future interventions. Similarly, synergizing with other conservation efforts would integrate the habitat restoration with broader conservation measures. These may include efforts related to climate change adaptation, biodiversity conservation, and watershed management (Isoun *et al*, 2020). Similarly, another way government at different levels can promote aquatic resource management is through the sustenance of climate adaptation strategies. However, developing and implementing climate adaptation strategies is imperative for safeguarding aquatic resources. This can include investing in climate-resilient infrastructure, enhancing water management practices, and promoting community awareness on climate issues. This involves enhancing institutional capacities, ensuring transparency, and fostering collaboration among government agencies, NGOs, and local communities (Ogunlade & Adetuji, 2023) On the other part, Olaosebikan and Oni (2022) analysed several critical strategies for strengthening governance in the context of aquatic resources management in Nigeria. Their ideas focus on enhancing institutional frameworks, promoting stakeholder engagement, and improving policy implementation. They emphasize the need to empower regulatory agencies responsible for managing aquatic resources. This includes providing adequate training, resources, and authority to enforce laws and regulations effectively.

Initiatives and Development Plans for Aquatic resource management

The economic recovery and growth plan for the water sector focuses on supporting the integrated transformation of the agricultural sector, increasing electricity production, and the promotion of ecosystem integrity to drive economic growth and ensure food security in Nigeria. To achieve their four stated objectives, the National Irrigation Development Programme (2016-2030) was launched to develop a total of 500,000 hectares of irrigation land by 2030. By December 2020, the program had delivered a total of 121,792 hectares of irrigated land (NBS, 2020).

With the support of the World Bank and other development partners, the Federal Government of Nigeria has developed initiatives designed to fill identified gaps which have limited citizens' ability to have access to safe and portable water. One such initiative, is the National Urban Water Sector Reform Program (NUWSRP), which has several objectives including sector reform, water utility sustainability and commercial viability, infrastructure improvement, service reliability and performance enhancement, and increased access to quality piped water networks in urban areas nationwide. The World Bank continues to support the Government of Nigeria through the Nigeria Sustainable Urban and Rural Water Supply, Sanitation and Hygiene (SURWASH) Program, which aims to provide 6 million Nigerians with basic drinking water services, support 1.4 million in accessing improved sanitation services, develop improved WASH services in 2,000 schools and Health Care Facilities, and assist 500 communities in achieving Open Defecation Free status (NBS, 2020).

Conclusion

Historically, Nigeria's waterways, including rivers like the Niger and Benue, have been central to the livelihoods of various communities. These water bodies have facilitated trade, transportation, and cultural practices, serving as crucial arteries for economic activities. The historical narratives explored in the context of this paper underscores how indigenous practices related to fishing, farming, and trading have evolved over time, influenced by colonial policies and modern economic demands. Aquatic resources contribute significantly to Nigeria's economy providing employment opportunities for unemployed youths and ensuring adequate food security nationwide. The study emphasizes the potential for aquaculture and sustainable fishing practices to enhance economic prosperity, particularly in coastal and riverine communities. The exploration of tourism related water bodies also creates opportunities for revenue generation through eco-tourism and recreational activities. However, the exploitation of aquatic resources is fraught with challenges such as environmental degradation, pollution from industrial activities, and the impact of climate change which pose significant threats to water bodies and their ecosystems. This study to an extent emphasized the need for innovations to safeguard the country's aquatic resources. The study submits that Nigeria should package a comprehensive aquatic resource management strategy that aligns with global standards. By doing so, Nigeria can ensure that its aquatic resources continue to promote sustainable national development for generations yet unborn, while also preserving both the ecological integrity of its water bodies and the livelihood of its people at the same time.

Recommendations

- i. . Establishment of Efficient Policy Framework for Sustainable Aquatic Resource Management: The Federal Government should establish efficient policy framework for the sustainable management of aquatic resources domesticated in Nigerian riverine communities. Such policy framework can drastically reduce serious threats posed by oil spillage, illegal fishing activities and coastal erosion. Equally, sustainable policy thrust by different tiers of government on aquatic resource management can promote rich biodiversity and extensive development of mangrove forests in the Niger delta region of Nigeria. Similarly, maritime laws enacted by the Federal Government should prohibit poaching activities against aquatic creatures (i.e fauna and flora) and create room for broader ecological sustainability. Furthermore, adequate policy framework by the Nigerian government can stimulate potentialities for marine tourism which can increase the revenue earnings of the country.
- ii. Establishment of effective fisheries management strategy: The federal, states and local governments should without further delay develop comprehensive fisheries management strategy that regulate fishing practices and protect critical habitats in Nigerian riverine communities. There is need for different governmental structures to partner with local communities in the decision-making processes regarding the use and management of aquatic resources. Government should put in place training programmes on modern fishing techniques, aquaculture, and conservation that can enhance the knowledge base and skills for promoting sustainable aquaculture practices that can help meet food demands of teeming Nigerian population without overexploiting wild fish stocks. Government at different levels should promote fish based research initiatives aimed at developing high- fish yield species and sustainable feed for fishes. Finally, government policy thrust on the establishment of sustainable fish farming centres will in no small measure provide financial incentives and support to rural farmers who will be efficiently trained to adopt environmentally friendly aqua cultural practices.

- iv. Enactment of Legislative Acts for Sustainable Aquatic Resource Management: Environmental legislation should be enacted to enforce strict environmental laws aimed at mitigating pollution and habitat degradation. However, regular monitoring and assessment of water bodies can help track ecological disasters such as oil spillage, floods, droughts, pollution, chemicals spill etc. Equally, laws on aquatic resource management can be complimented with community engagement through quality education. Successive governments in Nigeria should through the instrumentality of environmental laws educate its citizens about ecological issues and conservation initiatives, such as tree planting, clean-ups, and wildlife protection. The Nigerian government should work in tandem with the states and local governments to sensitize her citizens on preparedness for environmental/ ecological disasters including evacuation routes and the use of emergency shelters.

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