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Water Bodies and Economic Development: Perspective on Rivers and Bayelsa States

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Abstract: This study explores the role of water bodies in the economic development of Nigeria. The study was guided by two objectives, to find out major contributions of water bodies to growth of Nigeria's economy and to identify challenges associated with the use of water bodies. Data for the study were obtained from primary and secondary sources. The study anchored its analysis on the stakeholder's theoretical framework. Data obtained were qualitatively and quantitatively analyzed. The Study results shows that water bodies in Nigeria facilitates economic integration between the riverine and upland traders particularly in the Niger Delta. The study also revealed that water bodies enhanced revenue generation. This is observed in Rivers State and Bayelsa through tourism attraction. Also, the study shows that most imported goods find way into the cities of these states through water bodies especially Atlantic Ocean. Again, considerable sea food consumed by the locals in these states are obtained from its water bodies. However, major challenges include piracy, pollution of waters and poor regulatory framework and infrastructure for the management of water bodies in the country. Based on the findings, the study suggests among others effective security on the water ways and collaborative frameworks in order to maximize the economic potentials of water bodies in Nigeria.

Keywords: Water bodies, Economic Development, Transportation, Agriculture, Tourism

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Introduction

Nigeria has a variety of water body classifications. The country has significant geographical and climatic variety, with the Atlantic Ocean along its southern borders and an expansive savanna region extending from the Middle Belt to the northernmost areas. The nation has a coastline of roughly 853 km, a coastal area of 923,768 km², a continental shelf area of 37,934 km², and an Exclusive Economic Zone (EEZ) of 210,900 km². The coastal zone of Nigeria is situated between 4°10' and 6°20'N latitude and 2°45' and 8°35'E longitude, next to the Gulf of Guinea [1].

Nigeria has ample water resources for several use. The country has several small and large rivers and dams, the precise size of which cannot be definitively determined due to seasonal and annual variations [2]. The overall precipitation in the nation diminishes from the coast towards the north, with the southern region seeing an annual rainfall of 1500–4000mm, while the extreme northern region receives between 500–1500mm. According to Ita & Sado et al., major rivers include roughly 10,812,400 hectares, constituting 11.5% of the nation's total surface area, estimated at around 94,185,000 hectares [3]. The country has efficient drainage due to a rather dense network of rivers and streams. In Nigeria, five distinct drainage systems may be recognized [4].

- i. The Niger-Benue River system
- ii. The Lake Chad system
- iii. The Cross River Basin
- iv. The Anambra River Basin and;
- v. The Ogun-Oshun Basins.ⁱ

Numerous nations and urban areas have seen water resources' potential as a valuable asset and are actively using them to foster economic development. According to the National Inland Waterways Authority, over 3,800 of Nigeria's 10,000 km of navigable waterways are accessible at certain periods of the year [5]. The canal provides access to twenty-eight of Nigeria's thirty-six states and establishes essential links with five adjacent countries: Equatorial Guinea, Cameroon, Chad, Niger Republic, and Benin Republic (Port Novo). Over 80% of international commerce is now conducted by marine means, with 90% of Africa's imports and exports transpiring via sea channels. Consequently, it is essential for Africa, and Nigeria specifically, to capitalise on the potential the marine industry offers. In this context, the research analysed the economic advantages of Nigeria's aquatic resources and maritime territories [6].

Method of Study

The method used for the study was qualitative. The method used was determined largely by the that we needed to provide inductive interpretation on the subject of study. A qualitative research method involves a 'process of naturalistic inquiry that seeks in-depth understanding of social phenomena within their natural setting'.ⁱⁱ Qualitative research method made possible the collection of specific information about the values of the opinion on the subject of the study.ⁱⁱⁱ

Data for the study was collected in two main ways; primary and secondary. Primary data was collected or observed from first-hand experience the stakeholders in the maritime economic sector [7]. It was collected straight from the respondents from the maritime workers in Rivers State and Bayelsa. Secondary data were sourced from published publications, research studies, journal articles, media stories, and academic writings [8]. The data acquired from this source was crucial to the study as it serves as a foundational reference for initiating any investigation. In this research, secondary data served as a valuable source of historical context for the study [9].

Water Bodies

Water is a crucial natural resource on Earth, existing in several forms. Water bodies may be categorised into saline and freshwater, as well as into small and big classifications. Their characteristics distinguish them from one another. You must have seen seas, streams, ponds, and more. All of them are bodies of water that have paramount significance for life on Earth [10]. Let us examine the many categories of water bodies in depth for enhanced comprehension.

Oceans

Oceans are the largest bodies of water on Earth, encompassing at least 71% of its surface. All marine saltwater present on Earth finally converges in the World Ocean [10]. Nevertheless, the arrangement of our continents facilitates the differentiation of various ocean basins. Consequently, based on this differentiation, the Pacific Ocean is the biggest ocean. Subsequently, we encounter the Atlantic Ocean, followed by the Indian Ocean. Ultimately, we have the Southern Ocean followed by the Arctic Ocean. Humanity relies on seas in several capacities, such as sourcing food, facilitating transportation, and influencing the hydrological cycle[11].

Seas

These might be referred to as sub-sections of the oceans. The coastal areas of the oceans that are encircled by land masses are referred to as seas [12]. The Mediterranean Sea is the most prevalent example of a sea. We also own other notable bodies of water, such as the South China Sea, the Caribbean Sea, and the Bering Sea. Many of these water bodies have a direct connection to

the ocean. Nevertheless, some saline water bodies exist, with the Caspian Sea serving as a prime example. Moreover, it subdivides into smaller classifications of bays, straits, and gulfs [13].

Lakes

These are inland water bodies containing either freshwater or saltwater. Lakes are surrounded by land, therefore some classify the Caspian Sea as a lake. There is no definitive distinction between a lake and a pond. Furthermore, lakes may be substantial, such as the Great Lakes in North America and Lake Baikal in Russia. Lakes are formed via several processes, including glacial erosion, volcanic eruptions, and river damming [14].

Rivers and Streams

These are essentially dynamic bodies of water. The water that flows on the Earth's surface forms rivers and streams. Streams might be considered diminutive counterparts of rivers. They comprise freshwater that ultimately reaches the ocean by the continuous flow of rivers and streams [15]. Rivers serve as a significant source of both water and electricity. Moreover, they are extensively used for transportation and as fishing grounds. The River Nile in Africa is one of the longest rivers globally, alongside the River Amazon in South America. Additionally, we have the Mississippi, Congo, Mackenzie Rivers, among others [16].

Glaciers

Glaciers are solidified masses of water. They are a kind of water body that flows slowly, akin to frozen rivers. All glaciers, ice caps, and glacial ice are millions of years old. They encompass over 10% of the Earth's terrestrial surface and serve as sources of freshwater [17].

Economic Development:

A Synopsis From a policy standpoint, economic development is described as initiatives aimed at enhancing the economic welfare and quality of life within a community by generating and/or preserving employment opportunities and fostering income growth and stability. It is a continuous communal endeavour to enhance the local economy and quality of life by augmenting the region's ability to react to economic fluctuations.^{iv} This term indicates a distinction between economic development and economic growth. Economic development signifies an augmentation in employment and revenue within the society. It pertains to the growth of economic activity inside the state. Conversely, economic development includes the expansion of employment and income, a sustained enhancement of productivity among persons, enterprises, and resources to elevate the general welfare of residents and improve quality of life [18]. To attain economic growth, the Salmon Valley Business and Innovation Centre has identified three critical areas that need careful consideration. These encompass: (a) Policies that governments use to achieve overarching economic goals such as price stability, elevated employment, an enlarged tax base, and sustained growth. These efforts include monetary and fiscal policy, regulation of financial institutions, trade, and taxation policies. Policies and programs aimed at delivering infrastructure and services, including roadways, parks, affordable housing, crime prevention, and educational initiatives [19]. (c) Policies and programs explicitly aimed at job creation and retention through targeted initiatives in business financing, marketing, community development, small business establishment and growth, business retention and expansion, technology transfer, workforce training, and real estate development. This third group is a major concern for economic development specialists. In this research, economic development refers to employment creation, income generating, and other water-related enterprises [20].

Water bodies in Economic Development in Niger Delta

The Strand shoreline extends across a distance of 85 kilometres from the estuaries of the Imo River to the Cross River. The Strand coast serves as the intermediate between coastal and riverine environments, with a vast delta that spans nine states in the nation. The Niger-Delta States comprise about 25% of Nigeria's population. Each of these states has a coastline land region next

to the Atlantic Ocean. The states are Ondo, Edo, Delta, Bayelsa, Rivers, Cross River, Imo, and Akwa Ibom. Rivers and Bayelsa, regarded as the economic hub of the Niger Delta, are generally recognised for their significant but underutilised potential. The state's water transportation system represents an unfulfilled promise. The road transport system is inefficient and disorganised, leading to substantial output losses as people face persistent traffic congestion. Robust transport infrastructure is universally acknowledged as a primary driver of global economic growth[21].

The capacity to rapidly and economically convey people and cargo between destinations is crucial for promoting economic growth, and inland water transport represents the most cost-effective, ecologically friendly, and energy-efficient method for transporting any kind of commodities.

Water functions as a cost-effective and safe mode of transportation, while also being essential for promoting economic development, alleviating poverty, and creating job opportunities for youth globally. In Bayelsa, rivers like as the Nun River, Sangana River, Ekole Creek, Brass Creek, Akassa Creek, and Opu Creek, together with the Okoroba and Otuokpoti streams, provide potential alternate transportation routes [22].

In Rivers and Bayelsa States, rivers enable the transportation of products, persons, and services. This means of travel may considerably enhance economic growth in several ways. The use of waterways alleviates congestion. Inland water transport may alleviate road congestion by offering an alternate means of transit. This alternate method boosts efficiency and decreases travel time, hence promoting larger economic advantages. Water transportation is often more economical than road transportation, especially for large items and long-distance shipping. Leveraging rivers may diminish transportation expenses for enterprises, resulting in enhanced commerce and economic progress [23].

A notable contribution of water bodies to economic growth in Nigeria is seen in the realm of job creation. Enhancing the inland water transportation industry in Lagos State may provide job possibilities across several sectors, particularly in boat operations, construction, maintenance, and administrative positions. The growth of this industry may reduce unemployment and stimulate economic activity in the area[24].

The creation and administration of coastal and marine tourist centres would provide many employment possibilities for jobless Nigerian youngsters. The employment opportunities will extend beyond tourist sites and associated amenities, facilitating the growth of tourism-related companies and services that will include a significant number of both skilled and unskilled labourers. Direct employment at the tourist site will include individuals in several roles such as tourism management and administration, field supervision, tour guide, souvenir sales and security management. Service providers in areas such as transportation, hotel, hospitality, entertainment, and other tourism-related businesses will also provide employment opportunities. The aggregate impact of direct and indirect employment from tourism and related service providers will contribute to lowering the nation's unemployment rate. When tourist sites are situated in rural regions, rural-urban migration will diminish, facilitating the decongestion of urban centres. Engaging youth via job development will reduce poverty levels and improve the living standards of many homes[25].

The most apparent economic advantage of coastal and marine tourism is the revenue generated from tourist visits to these centres. Revenue creation may be from local sources or foreign currency revenues, which need visits by overseas people. In several developing nations, international visitors are prioritised above local tourists due to the foreign currency revenue generated by overseas trips. The bulk of African nations depend on income generated by foreign people, particularly from Europe, North and South America, Asia, and Australia. Countries in Africa that have significantly profited from tourism as a source of foreign revenue include Kenya, Seychelles, Botswana, Namibia, Ethiopia, Egypt, and South Africa, among others.^v Nigeria is still advancing its tourist offerings. Consequently, foreign currency revenues from tourism remain

inferior in comparison to the aforementioned African nations. In 2014, travel and tourism directly contributed around 1.7% to the nation's gross domestic product, amounting to NGN1,560.2 billion.^{vi} The rapid advancement of the tourist industry and its patronage will result in heightened local and international revenue. Such revenues would enable the Nigerian government to develop and sustain infrastructure, compensate its workforce, settle foreign debts, and facilitate the appreciation of the naira in the global currency market. Aliyu, Abdul Kadir, and Aliyu assert that the aforementioned advantages represent some of the economic effects tourism would have on Nigeria, which is among the fastest-growing sectors worldwide.^{vii} Lagos State has several aquatic features, including lagoons, streams, and rivers. By enhancing inland water transit and upgrading canal infrastructure, the state can entice visitors and leisure enthusiasts, therefore fostering revenue production and economic growth. The waterways of Lagos provide opportunities for tourist and leisure activities, including boat tours, fishing, and water sports events. These events may entice both local and foreign travellers, fostering the expansion of the tourism sector and earning cash [26].

The advantages derived from coastal and marine tourism span national, regional, state, and local levels. These benefits include foreign exchange earnings, the generation of a substantial pool of skilled and unskilled employment, infrastructure enhancement, promotion of recreational and educational values, exhibition and exchange of sociocultural values, preservation of cultural heritage, and conservation of natural resources. The economic, social, and cultural advantages possess immeasurable worth that the government at several levels may use in their development initiatives [27].

Research indicates that the ocean economy is valued at over 20 trillion dollars. These include the fisheries, pharmaceutical, and renewable energy sectors. The territory next to the Atlantic Ocean comprises the coastal regions of each state. Prominent coastal and marine tourism destinations in Nigeria encompass Lekki and Badagry Beaches (Lagos State), Aghenebode Sand Beach (Edo State), Asaba and Otuogo Beaches (Delta State), Okpoama Beach (Bayelsa State), Ikofe and Port Harcourt Beaches (Rivers State), Ibeno Beach (Akwa Ibom State), and Calabar, Lagos, and Coconut Beaches (Cross River State).

They provide access to isolated regions. Rivers and Bayelsa, especially Akwa Ibom, possess several rural regions that are unreachable by road or rail. Inland water transport enables access to these regions, promotes commerce, and links towns to broader markets. This fosters economic growth in hitherto remote areas. Thus, they act as a catalyst for the agricultural and industrial sectors. Inland water transportation may significantly enhance the agriculture sector by facilitating the effective distribution of agricultural products to markets. It further helps the industrial sector by transporting raw materials and completed products. Cultural Heritage and Diversity Tourism facilitates interactions among individuals from many social backgrounds. It facilitates the display of the cultural values of host communities in domains such as local language, customs, music, arts and artefacts, religion, history, attire, education systems, and local recreational activities. Besides cultural dilution, tourism will facilitate the exhibition of the profound sociocultural values of ethnic groups in host communities where tourist sites are located. Nigeria is said to include about 250 ethnic groupings, each exhibiting distinct cultural characteristics, moral beliefs, and standards [27].

The country has abundant cultural and biological resources, positioning it as a prominent tourism destination in Africa. Regrettably, Nigeria has not fully optimised its tourist potential in this context.^{viii} The nation has insufficiently investigated the possibilities of coastal and marine tourism, much less derived revenue from this subsector. Beyond the deficiencies of the Nigerian government in implementing policies to foster tourist development, establishing a conducive climate, and assuring the availability of incentives for the private sector, further factors contributing to the lack of tourism growth in Nigeria are delineated by Dantata.^{ix} The challenges include limited tourist knowledge and its advantages among Nigerians, absence of regulatory laws, low disposable income, Niger Delta militancy, and the lack of professionalisation in the coastal and marine tourism sector in Nigeria. The development of coastal and marine tourism can

yield socioeconomic advantages, particularly as the Nigerian government seeks to diversify the economy from its reliance on crude oil to a multiproduct economy capable of withstanding fluctuations in global oil prices [28]. The Maritime Transportation Industry in Nigeria is unquestionably crucial to the nation's economic development. Its function might favourably influence the economy or serve as a setback to it. The history, growth, and advancement of countries are intricately linked to the level of development of the marine transport sector, whether it is nascent or well established. The Nigerian economy is categorised as a mixed economy, with the marine industry serving as a significant sector, particularly given the country's reputation as a major oil producer and exporter. Maritime commerce has significantly contributed to Nigeria's economic development. It constitutes about 95% of Nigeria's international trade transportation. A sufficient and effective marine transport infrastructure is crucial for the economic growth of a country's market, particularly in international commerce, by converting local markets into national, regional, and worldwide entities. This facilitates economies of scale in regions with significant comparative advantages, resulting in substantial job prospects. The marine industry is capital-intensive and hence needs substantial finance.

Challenges associated with Water bodies in Nigeria

The analysis of data gathered for the study show that the sector is indeed facing some critical challenges.

Inadequate infrastructure

The primary issue is insufficient infrastructure. Proper infrastructure is essential for the development of effective inland water transportation. This includes the building and upkeep of ports, terminals, jetties, and navigational channels. Investing in infrastructure is essential for the efficient functioning of water transportation networks. For coastal and marine tourism to reach its full potential, the development of infrastructure in host communities with natural resources is essential, regardless of whether the community is rural or urban. Alongside fundamental amenities established by tourism-related service providers, infrastructures include roads, trains, seaports, airports, drinkable water systems, electricity supply, telecommunications, entertainment venues, and retail centres enhance comfort and function as attractions for travellers.^x Furthermore, infrastructure development would mitigate the degree of restiveness among Nigerian young. An illustrative instance of this is the Niger Delta insurgents who, in addition to advocating for resource control, are also insisting for infrastructure development. The Niger Delta has an extensive coastline that may be cultivated into a substantial coastal tourist asset. However, the youth unrest and agitation in the region has not allowed for the adequate utilization of the coastline for tourism purposes let alone its development. The occurrence of social unrest and young discontent may be mitigated by the synergistic effects of tourism and its advantages, particularly in terms of infrastructure development.^{xi}

Legislation and Legal Matters /Reforms

The Nigerian Law Reform Commission is one of several agents of change. The Law Reform Commission is an omnibus entity, since it addresses not just maritime law but also several other legal domains, including constitutional and criminal law. The Nigerian Shippers Council, Nigerian Maritime Lawyers Association, and the National Assembly Committee on Marine Transport will, at various times, depend on the Nigerian Law Reform Commission to fulfil their responsibilities efficiently. The implementation of several extensive programs by the Federal Government, ranging from transforming transport to aligning the marine sector with the economic objectives of the Federal Government. Aligning the maritime sector with the global economy and implementing port changes are stagnant and very inactive.

The marine sector has been entirely overlooked throughout the years. The maritime business in Nigeria is projected to generate N7 trillion yearly. To generate income from this industry, a comprehensive reform of the policy, institutional, regulatory, and legal frameworks is necessary. A new national shipping policy must be developed. The shipping policy of Nigeria originated in

1987 with the enactment of the Nigerian Shipping Policy Act, No. 10 of 1987, subsequent to Nigeria's acceptance of the United Nations Code on Trade and Development (UNCTAD). UNCTAD was set to approve the 40:40:20 codes, which pertains to ship purchase, cargo distribution, and shipping operations. According to the code, 40% of the overall cargo traffic volume and income was allocated to indigenous Nigerian carriers, 40% to carriers of goods originating from destination nations, and 20% to recognised third flag carriers. If enforced, this would significantly rectify the imbalance in shipping commerce as it pertains to Nigeria. The objective of the Nigerian Shipping Policy was to cultivate a robust shipping sector that would create cash for Nigeria and its citizens. The Nigerian Maritime Authority (NMA) was formed to coordinate and execute Nigeria's National Shipping Policy in order to advance the maritime sector. Upon its establishment in 2007, the Nigerian Maritime Administration and Safety Agency (NIMASA), successor to NMA, lacked a clearly defined scope concerning Nigeria's Shipping Policy. Nevertheless, it was tasked with the promotion and development of indigenous commercial shipping in both international and coastal trade, as well as the regulation and enhancement of maritime safety, security, marine pollution, and maritime labour. The commercial Shipping Act of 2007 was established to regulate commercial shipping and other problems. This Act mandates implementation by NIMASA and establishes laws for ships operating in Nigeria concerning license, registration, certification, and penalties for non-compliance. Numerous government entities in the marine sector exhibit functional redundancy. An urgent need exists to restructure these institutions for enhanced functionality and productivity.

Coordination and cooperation among stakeholders, including government agencies, transport operators, port authorities, and other pertinent organisations, are essential for the effective implementation of inland water transportation networks. Efficient cooperation may mitigate regulatory, operational, and logistical issues.

Marine Environmental Protection

Marine pollution adversely affects water bodies and coastal regions, leading to environmental and ecological damage. Nigerian coastal waterways, like to those of other coastal and port nations globally, encounter the issue of marine pollution, sometimes resulting from industrial activities at the ports. Nigeria's maritime pollution issue is intensified by oil and gas exploration and production, similar to other petroleum-producing countries. Nigeria's petroleum resources are now sourced from the Niger Delta, an area distinguished by rivers, streams, creeks, and the Atlantic Ocean. Marine pollution resulting from petroleum extraction is a significant catalyst for social unrest in the region, which has garnered both national and international attention over the years, prompting the Nigerian government to implement extraordinary measures, such as the innovative establishment of the Niger Delta Development Commission (NDDC). It is vital to analyse the legislation concerning marine pollution, identify its deficiencies, and propose enhancements to the legal framework to mitigate the social, economic, and environmental detriments of marine pollution. It is important to note that there is no specific legislation or legal framework in our national statutes addressing the destruction of our maritime environment.^{xii} We possess laws, rules, and international treaties on this matter, and adhering to these laws is a significant difficulty owing to the pervasive corruption.

Safety and Security

While the safety and security inside the Nigerian maritime sector have enhanced over the years, there is an imperative need to bolster the security of this industry. The prevalence of piracy in Nigeria is attributable to the significant corruption inside the nation. Piracy, maritime theft, and unlawful bunkering persist to this day. Despite an escalation in military involvement, several deficiencies in the system persist. Nigeria's primary source of income is the exporting of crude oil, attributable to its huge natural oil reserves. The insufficient circulation of oil revenue throughout the populace has resulted in elevated levels of oil exploitation and illicit bunkering. This exacerbates illicit activity and fosters maritime piracy, among other offences. Appropriate steps must be implemented to mitigate these actions at sea. To enhance safety, the Nigerian Maritime

Administration and Safety Agency (NIMASA) urged the Nigerian Air Force to provide aerial tactical assistance for maritime operations targeting illegal shipping activities. The recent effectiveness of anti-piracy operations conducted by the Agency, the Nigerian Navy, and the Nigerian Air Force has bolstered this agreement between the two sides. This is undoubtedly a sound technique, but the efficacy of the memorandum is crucial for enhancing the safety and security of seafarers and cargo.

Nigeria's Ascendancy as a Nexus of Regional and Global Piracy Threats The concerns of piracy in Nigeria have significantly evolved since the beginning of the 21st century. From the 1990s to the early 2010s, the worldwide dangers of piracy in Nigeria's maritime domain and the West Coast of Africa were significantly comparable to those in Somalia, the East Coast of Africa, and East Asia. Nonetheless, piracy along the East and West Coasts of Africa was the most sophisticated, lethal, and menacing globally.^{xiii} In 2010, Africa represented 58.2% of the worldwide pirate incidences. Nonetheless, the pirates in the area were responsible for 88.9% of armed assaults, 92.5% of ship hijackings, 88.7% of hostages taken on board, 85% of offshore kidnappings, 81% of injuries, and all instances of fatalities related to piracy and armed robbery against vessels worldwide.^{xiv} Simultaneously, the incidence of piracy along the East Coast of Africa has diminished due to the multinational naval operation, decreasing from 237 occurrences in 2011 to 75 in 2012, 15 in 2013, 11 in 2014, and ultimately to none in 2015.^{xv} Nonetheless, the menace of piracy in Nigeria and the West Coast of Africa has persisted despite national and regional responses.^{xvi}

The century started in 2000, with Nigeria representing 1.9% and 28% of the total global and regional pirate incidents, respectively. Nigeria accounted for 554 occurrences, or 8.8% of global pirate incidents and 51.6% of those in the Gulf of Guinea from 2000 to 2020.

Nonetheless, the menace of piracy has persisted at a reasonably stable and progressively increasing rate in Nigeria over the last twenty years, particularly after 2011 when it began to diminish worldwide. In 2020, Nigeria represented 18% of global piracy incidents, 17.6% of hostages, 46% of kidnappings, and 42.3% of firearms used by pirates worldwide. It is crucial to acknowledge that incidents of piracy and armed robbery targeting vessels in Nigeria and the Gulf of Guinea are often underreported due to a lack of faith in security agencies and the corporate safety record, which often deters the reporting of such events. Furthermore, several instances of armed robbery targeting vessels in adjacent seas and piracy in the Gulf of Guinea have implicated Nigerian pirate factions, as multiple recorded incidents of seafarer abduction and ship hijacking in the area have been linked to Nigeria.

Guaranteeing the safety and security of waterborne traffic is essential. A multidimensional strategy is required; measures including appropriate vessel maintenance, enforcement of regulations, and effective security are essential to cultivate confidence and reliability in the utilisation of inland waterways.

Human Resources and Training

In any industry, human resources play a crucial part in its development; thus, training must be offered to facilitate research that will expand and improve the sector's efficacy. In 2009, the Nigerian Maritime Administration and Safety Agency (NIMASA) established the Nigerian Seafarers Development Program (NSDP) for student training. Over a thousand students enrolled in the program and graduated from different institutions in the UK, Romania, Egypt, the Philippines, and other countries. Regrettably, hardly 20% of the graduating students have successfully undertaken Sea time training, which is a fundamental requirement of the Standard Certification and Watch Keeping (STCW) Manila Convention. The deficiency in training and the development of personnel capacity is a significant impediment to the advancement of the human resources sector within the business; thus, more emphasis must be placed on improving this domain.

Funding

As previously mentioned in the introduction, the marine industry is capital-intensive and hence needs substantial finance. The nation has significant commercial activity and elevated

shipping demand owing to its robust trade levels. Nigeria has generated sufficient income; nonetheless, it continues to face a deficiency in capital and funding. This industry has embezzlement issues, posing significant risks for foreign investors.

Concluding Remark

Aquatic environments may serve as a crucial remedy to mitigate congestion in urban centres like Lagos, Rivers, Bayelsa, and other similarly crowded towns. Offering an alternate transportation option may improve efficiency, decrease journey duration, and provide economic and environmental advantages. Successful implementation requires meticulous planning, infrastructure construction, and stakeholder collaboration.

To properly exploit the economic potential of aquatic bodies, the state government must spend in enhancing waterway infrastructure. This includes dredging and sustaining navigable waterways, erecting jetties and terminals, and enforcing safety protocols. Furthermore, engaging with private sector players and implementing supporting policies and incentives will be essential for attracting investments and fostering development in this industry. The development of water bodies may enhance the economy, provide employment, alleviate congestion, and adhere to sustainable development principles, fostering a more balanced and eco-friendly urban infrastructure.

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