International Journal of Academic and Applied Research (IJAAR)
ISSN: 2643-9603
Vol. 10 Issue 8 August - 2026, Pages: 216-223

Nigerian Blue Economy and Maximizing Potentials of Inland Water Transport (IWT): Insights from Indonesia and India

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Abstract: *Nigeria's blue economy represents a vast and largely untapped frontier of national development, with inland water transport (IWT) emerging as a critical but persistently underutilized component of the country's maritime sector. With over 10,000 kilometres of waterways and a blue economy potential valued at approximately US$296 billion, Nigeria possesses the natural endowments necessary to transform its inland waterway network into a powerful engine of economic diversification, freight logistics, food security, and employment generation. However, decades of inadequate dredging, deteriorating river-port infrastructure, weak regulatory enforcement, and persistent safety deficits have undermined the sector's productive capacity, limiting navigable routes to between 3,000 and 4,000 kilometres of the available network. The study examined the Nigerian blue economy with a focus on maximizing the potentials of inland water transport, drawing insights from Bangladesh and India as example for best practices in inland waterway development within blue economy framework. Descriptive analytical approach and thematic analysis were adopted for the study while the Blue Economy Sustainability Framework and the Transport System Theory served as the theoretical frameworks. The study revealed that unlocking Nigeria's inland water transport potential requires sustained investment in dredging operations, modern fleet development, navigational infrastructure, safety regulation, and integrated multimodal logistics planning within a coherent national blue economy policy architecture.*

Key Words: Blue Economy, Maximize. Potentials, Inland, Waterways.

1.1 INTRODUCTION

The global blue economy, encompassing the sustainable utilization of ocean and inland water resources for economic growth, improved livelihoods, job creation, and marine ecosystem preservation, has gained increasing prominence as nations seek pathways to economic diversification beyond traditional resource sectors (Patil et al., 2021). Inland water transport (IWT), as a sub-sector of the blue economy, involves the movement of passengers and freight through rivers, lakes, canals, and other navigable inland waterways, and constitutes a cost-effective, energy-efficient, and environmentally sustainable alternative to road and rail transportation (Maersk, 2024). The blue economy refers to the sustainable exploitation of aquatic resources for economic growth, food security, environmental sustainability, and the generation of livelihoods within a responsible governance framework (Ntona & Morgera, 2018). Inland water transport, therefore, plays an integral role in the blue economy by reducing logistical costs, decongesting road networks, facilitating agricultural supply chains, and connecting coastal and hinterland communities to economic opportunity (Chowdhury et al., 2024).

In Nigeria, the federal government estimated the country's untapped blue economy potential at approximately US$296 billion, underscoring the scale of unrealized value embedded in its maritime and inland water resources (Ikeogu et al., 2025). With a coastline stretching approximately 870 kilometres and an inland waterway network covering over 10,000 kilometres, Nigeria possesses one of the most extensive aquatic resource bases in sub-Saharan Africa (Umehai et al., 2026). The country's two principal rivers, the Niger and the Benue, traverse the North, Middle Belt, South-East, and South-South regions, creating a natural economic spine that historically served as a backbone of domestic trade and freight movement (Eze & Okafor, 2024). However, despite this endowment, only between 3,000 and 4,000 kilometres of these waterways are currently navigable and commercially viable, constraining inland water transport's contribution to the blue economy and increasing dependence on an already overburdened road infrastructure network (Adepoju & Bekesuomowei, 2023). The consequences of this underutilization have been economically severe. Nigeria is estimated to be losing approximately N33.3 trillion annually due to the underutilisation of its marine and inland water resources, while freight dependence on road networks has contributed to highway deterioration, urban congestion, inflated haulage costs, and supply-chain inefficiencies (Nwankwo, 2024). Additionally, inland waterway safety remains a critical concern, with Nigeria recording at least 231 fatalities from boat accidents in 2024 alone and over 300 deaths in 2023, reflecting persistent gaps in vessel regulation, operator training, and navigational infrastructure (Adepoju & Bekesuomowei, 2023). These challenges occur within the context of a broader blue economy policy environment that, while recently strengthened through the establishment of the Federal Ministry of Marine and Blue Economy and the gazetting of the Inland Waterways Transportation Regulation 2023, remains inadequately resourced and insufficiently integrated across agencies responsible for waterway governance.

The purpose of this paper, therefore, is to examine the Nigerian blue economy with a specific focus on maximizing the potentials of inland water transport, with a view to identifying strategies for sustainable sector development. The paper also covered conceptual definitions, an overview of Nigeria's inland water transport landscape within the blue economy, the dimensions and implications of IWT underutilization, challenges affecting sector performance, and comparative insights from Bangladesh and India. The scope covers the period from 2018 to June 2026, corresponding with increased national and international attention to Nigeria's blue economy and the institutional reforms undertaken to harness inland water transport as a driver of sustainable growth.

1.2 Insights from Bangladesh and India

In Bangladesh, inland waterways cover approximately 24,000 kilometres of rivers, lakes, and canals, constituting a foundational component of the country's transportation system and blue economy strategy. Bangladesh's inland water transport sector moves a significant share of freight and passenger traffic, and the government has invested substantially in terminal infrastructure, vessel modernization, and navigational dredging to sustain its navigable network (Islam & Sarker, 2021). The World Bank pledged approximately US$1.8 billion in delta-related infrastructure support, including inland waterways development and port upgrades, reflecting the sector's strategic importance to Bangladesh's economic growth trajectory (Navigating the Blue Economy in Bangladesh, 2025). These investments have contributed to improved cargo handling efficiency, reduced logistics costs, and strengthened food distribution chains, particularly for agricultural commodities transported between coastal ports and inland markets.

In India, inland waterways carry less than two per cent of the country's freight modal share, despite the existence of a vast network of rivers and canals (Comparative Study of Indian Transportation Infrastructure, 2025). However, the Indian government's Jal Marg Vikas Project, funded with World Bank support, has prioritized development of National Waterway 1 along the Ganga-Bhagirathi-Hooghly corridor to minimize logistics costs and improve freight movement (Comparative Study of Indian Transportation Infrastructure, 2025). Surveys from 2022 to 2023 indicate that logistics costs in India range from 14 to 18 per cent of GDP, significantly exceeding the global standard of 8 to 10 per cent, and that shifting cargo to waterways could produce substantial cost reductions for businesses, with waterway transport reducing fuel consumption by over 50 per cent compared to road transport (The Role of Inland Waterways in India's Economy, 2024). The experiences of Bangladesh and India demonstrate that strategic investment in inland waterway infrastructure, supported by dedicated governance frameworks and international financing partnerships, can significantly enhance the blue economy contribution of inland water transport sectors.

1.3 Method of Study

The study adopted descriptive analytical approach and thematic analysis to examine the Nigerian blue economy and the potentials of inland water transport. The study relied on secondary sources of data, including peer-reviewed journal articles, academic books, and reports from international organizations such as the World Bank, the Food and Agriculture Organization (FAO), the Asian Development Bank (ADB), and the Organisation for Economic Co-operation and Development (OECD).

1.4 Theoretical Framework

Theoretically, this study is eclectic in approach. The study is anchored on the Blue Economy Sustainability Framework and the Transport System Theory. The Blue Economy Sustainability Framework posits that sustainable use of aquatic resources requires integrated governance structures, coordinated investment in maritime infrastructure, and the alignment of economic development objectives with ecological conservation principles (Ntona & Morgera, 2018). Applied to this study, the framework explains how Nigeria's inland waterways, despite their enormous potential, remain underutilized because of the absence of coherent governance integration across transport, environment, fisheries, and economic planning agencies (Ikeogu et al., 2025). The Transport System Theory views transportation as an interconnected system in which infrastructure, operations, regulation, and demand are mutually dependent, such that weaknesses in one component propagate inefficiencies across the entire network (Rodrigue, 2020). Applied to this study, the theory illustrates how inadequate dredging, obsolete vessel fleets, poor navigational aids, and weak enforcement collectively undermine the productive capacity of Nigeria's inland water transport system, constraining broader blue economy outcomes (Nwankwo, 2024). Together, these frameworks provide a comprehensive analytical foundation for assessing how structural, institutional, and infrastructural deficits shape Nigeria's inland water transport performance and its implications for blue economy development.

1.5 Overview of the Nigerian Blue Economy and the Potentials of Inland Water Transport

The concept of the blue economy gained institutional momentum in Nigeria following global recognition of maritime and aquatic resources as drivers of sustainable economic growth, food security, and employment generation. Successive administrations increasingly acknowledged that Nigeria's coastline, ocean resources, and inland waterway network represented an underutilized frontier of national development, prompting the establishment of the Federal Ministry of Marine and Blue Economy and the

enactment of regulatory instruments aimed at formalizing the sector's governance architecture (Ikeogu et al., 2025). Nigeria's blue economy potential, valued at approximately US$296 billion by the Nigerian Maritime Administration and Safety Agency (NIMASA), encompasses fisheries and aquaculture, maritime transport and shipping, offshore oil and gas, coastal tourism, marine biotechnology, and the vast inland waterway network that traverses 28 of the country's 36 states (Eze & Okafor, 2024). Of this potential, inland water transport represents a particularly strategic component, given its capacity to reduce road freight dependence, lower transportation costs, and facilitate regional trade across agricultural and industrial corridors.

Despite this potential, Nigeria's inland water transport sector has remained chronically underdeveloped. Available data indicate that of the country's estimated 10,000 kilometres of waterways, only between 3,000 and 4,000 kilometres are currently navigable and commercially viable, with decades of inadequate dredging, deteriorating river-port infrastructure, insecurity, and policy inconsistency having eroded the sector's productive capacity (Nwankwo, 2024). The consequence has been an overwhelming freight and passenger dependence on road networks that are inadequate for the volume of traffic they carry, producing highway deterioration, urban congestion, inflated haulage costs, and compounding supply-chain inefficiencies (Adepoju & Bekesuomowei, 2023). Historically, the Rivers Niger and Benue served as the backbone of Nigeria's domestic trade network, connecting ports in Apapa, Warri, Port Harcourt, Onne, and Calabar to river ports and jetties across the interior of the country (Umehai et al., 2026). The decline of this network represents both a lost economic asset and a strategic opportunity for rehabilitation.

The global inland water freight transport market, valued at US$17.4 billion in 2023 and projected to reach US$33.5 billion by 2033 at a compound annual growth rate of 6.9 per cent, reflects the growing international recognition of inland waterways as a cost-efficient, environmentally sustainable alternative to road-dependent logistics systems (Allied Market Research, 2024). Nigeria's positioning within this global growth trajectory depends critically on its ability to restore and modernize its inland waterway network, develop complementary port and jetty infrastructure, and create an enabling regulatory environment that attracts private investment in vessel operations and logistics services. These imperatives have informed the four strategic pillars of the Federal Ministry of Marine and Blue Economy's implementation plan, which include legislative and policy framework strengthening, regulatory capacity development, skills development, and maritime safety and security improvement. The overview therefore highlights pertinent issues which are blue economy governance architecture, inland waterway infrastructure deficits, freight logistics dependence on roads, and the strategic need for navigational dredging and private sector engagement.

1.6 The Significance of Maximizing the Potentials of Inland Water Transport on the Nigerian Blue Economy

I. Reduction of Road Freight Dependence and Transportation Cost Savings

The development of Nigeria's inland water transport system has significant implications for reducing the country's overwhelming dependence on road freight, which currently accounts for the dominant share of domestic cargo movement despite road infrastructure that is chronically overstretched and inadequately maintained. Inland water transport is demonstrably the least expensive, most energy-efficient mode of freight conveyance, particularly for bulk goods, heavy equipment, and agricultural commodities transported over medium to long distances (Maersk, 2024). In Lagos State alone, whose population exceeds 20 million residents, road congestion generates significant productivity losses daily, and the development of inland water transport along the Lagos lagoon and connecting waterways has been identified as a critical intervention for congestion relief and economic efficiency improvement (Budgit Foundation, 2024). Available data suggest that Nigeria handles approximately 129.3 million metric tonnes of cargo annually through its ports, yet the inland waterway network that could distribute this freight cost-effectively into the hinterland remains critically underutilized (Punch, 2025). Thus, maximizing inland water transport directly reduces logistical costs, highway deterioration, and supply-chain inefficiencies that constrain Nigeria's blue economy competitiveness.

II. Employment Generation and Livelihood Development in Coastal and Riverine Communities

The expansion and modernization of Nigeria's inland water transport sector carries substantial employment generation implications across the value chain of boat building, vessel operations, port services, maintenance, cargo handling, and waterway administration. Statistics from the National Inland Waterways Authority (NIWA) indicate that 28 of Nigeria's 36 states can be accessed through water, reflecting the breadth of communities whose livelihoods are either directly or indirectly linked to the performance of the inland waterway network (NIWA, 2024). The inland water transport sector offers particular employment opportunities in fabrication industries, ferry operations, agro-logistics terminals, cold-chain transportation systems, and integrated freight platforms that, if developed, would improve food-distribution efficiency while creating jobs across riverine and coastal communities (Nwankwo, 2024). Nigeria's blue economy has been projected to generate at least three million jobs within the Federal Ministry of Marine and Blue Economy's four-year implementation framework, with inland water transport constituting a significant channel for employment distribution into underserved communities (Federal Ministry of Marine and Blue Economy, 2023). Thus, maximizing inland water transport enhances employment generation and strengthens livelihoods across Nigeria's riverine and coastal populations.

III. Improvement of Agricultural Supply Chains and Food Security

Inland water transport is intrinsically linked to Nigeria's agricultural supply chain performance, given that the country's most productive agricultural zones in the Middle Belt and river basin regions are accessible primarily through the inland waterway network, and that road-based transportation of perishable goods from these regions to urban markets incurs significant spoilage, cost inflation, and supply-chain unreliability. Strategic dredging of rivers such as the Niger and Benue, combined with the development of agro-logistics terminals, cold-chain transportation systems, and integrated freight platforms, would substantially improve food-distribution efficiency and reduce inflationary pressures linked to transportation (Punch, 2025). Fish, which constitutes over 40 per cent of animal protein intake in Nigerian coastal communities, is particularly affected by the inadequacy of inland water transport infrastructure, as artisanal fishing communities dependent on waterways face significant market access constraints that reduce their income and contribute to domestic fish supply shortages (Umehai et al., 2026). The World Bank has consistently advocated that blue economy investments in inland waterway infrastructure can improve livelihoods, create jobs, and strengthen food systems across coastal and riverine nations (World Bank, 2023). Thus, maximizing inland water transport improves Nigeria's agricultural supply chains, reduces food price inflation, and strengthens national food security.

IV. Attraction of Private Investment and Enhancement of Investor Confidence

A well-functioning inland water transport sector with predictable regulatory frameworks, modern navigational infrastructure, and demonstrated operational safety has significant potential to attract private investment in vessel operations, port logistics, tourism, and multimodal freight services within Nigeria's blue economy. Currently, Nigeria's ship charter market is estimated to be worth at least US$10 billion annually, the majority of which is handled by foreign-owned vessels, reflecting the failure of domestic maritime infrastructure development to create a compelling environment for Nigerian investors (Businessday, 2023). The Lekki Deep Sea Port, which has already consolidated Lagos' role as West Africa's premier maritime gateway, demonstrates that infrastructure investment generates investment multipliers, but its full potential depends on an inland distribution network that connects the port to hinterland markets efficiently and cost-effectively (Punch, 2025). Furthermore, Nigeria's coastal regions hold significant potential for maritime tourism and eco-tourism development at locations such as Lagos, Calabar, and Badagry, but the realization of this potential requires inland water transport infrastructure that connects tourist sites, supports ferry operations, and ensures passenger safety (Ntona & Morgera, 2018). Thus, maximizing inland water transport enhances investor confidence and stimulates private sector participation across multiple blue economy sub-sectors.

V. Environmental Sustainability and Carbon Footprint Reduction

Inland water transport offers demonstrably superior environmental performance relative to road and air transport, making its development within Nigeria's blue economy framework directly consistent with global sustainability commitments under the UN Sustainable Development Goals and the African Union's Agenda 2063. Studies show that transporting cargo via inland waterways reduces fuel consumption by over 50 per cent compared to road transport, producing significant reductions in greenhouse gas emissions, noise pollution, and road surface degradation (The Role of Inland Waterways in India's Economy, 2024). For Nigeria, a country increasingly affected by climate change impacts including flooding, coastal erosion, and drought, the development of inland water transport as a green logistics mode is consistent with both economic efficiency and environmental resilience objectives. Moreover, dredging operations that restore waterway navigability directly address the sedimentation problems that contribute to flood disasters, as sedimented waterways force water to seek alternative routes with destructive consequences for communities along riverbanks (Environews Nigeria, 2024). Thus, maximizing inland water transport strengthens Nigeria's environmental sustainability performance and contributes to its climate resilience agenda within the blue economy framework.

1.7 Factors Undermining the Maximization of Inland Water Transport Potentials in Nigeria's Blue Economy

1. Inadequate Dredging and Navigational Infrastructure Deficits

The most fundamental constraint on Nigeria's inland water transport sector is the chronic inadequacy of dredging operations and navigational infrastructure, which limits the commercially viable waterway network to between 3,000 and 4,000 kilometres of an estimated 10,000 kilometres available (Nwankwo, 2024). Sedimentation from sharp sand and organic matter has progressively reduced the navigable depth of major rivers including the Niger and Benue, rendering them inaccessible to commercial vessels for significant portions of the year and eliminating the freight carrying capacity that historically supported domestic trade across Nigeria's interior regions (Environews Nigeria, 2024). Apart from the Lekki Seaport, no other Nigerian port has the depth required to enable berthing of mother ships, resulting in delays and increased costs of cargo transportation, and the same depth insufficiency constrains river ports and jetties across the inland waterway network (Environews Nigeria, 2024). NIWA proposed dredging of 2,000 kilometres of navigable waterways and the completion of the Jamaja Inland Port in Lokoja, but insufficient funding has constrained the implementation of these interventions (Wikipedia, 2024). Thus, inadequate dredging and navigational infrastructure represent the primary structural barrier to maximizing the economic potential of Nigeria's inland water transport within the blue economy.

2. **Persistent Safety Deficits and High Accident Fatality Rates**

Inland waterway safety constitutes a critical challenge to the expansion and legitimization of water transport as a viable alternative to road and air transportation in Nigeria. Nigeria recorded at least 231 fatalities from a minimum of 11 fatal boat accidents in 2024, with casualties spread across Niger, Kwara, Kogi, Bayelsa, Lagos, and Delta States, reflecting the breadth and persistence of the safety problem across all regions of the country (Ships & Ports, 2024). In 2023, over 300 lives were lost to boat accidents nationwide, with the Marine Crafts Builders Association of Nigeria (MCBAN) recording over 3,000 boat accident incidents across a decade, indicating that the problem is systemic rather than episodic (Adepoju & Bekesuomowei, 2023). Common causes identified by maritime experts include poor operator experience, overloading, lack of life-saving appliances, inadequate vessel maintenance, night travel, and weak regulatory oversight, all of which reflect institutional failures in training, certification, and enforcement (HumAngle, 2025). The gazetting of the Inland Waterways Transportation Regulation 2023 and the commissioning of 15 boats of varying capacities for surveillance, safety enforcement, and emergency response represent important steps, but their implementation remains incomplete relative to the scale of the challenge (AllAfrica, 2024). Thus, persistent safety deficits undermine public confidence in inland water transport and constrain the sector's potential as a credible contributor to Nigeria's blue economy.

3. **Weak Inter-Agency Coordination and Governance Fragmentation**

Nigeria's inland water transport governance involves multiple agencies including NIWA, NIMASA, the Lagos State Waterways Authority (LASWA), the Nigerian Navy Marine Police, and various state-level transport authorities, yet coordination among these institutions remains fragmented, producing regulatory gaps, duplicated mandates, and insufficient enforcement of safety and operational standards (Ikeogu et al., 2025). The Inland Waterways Transportation Regulation 2023, while a significant normative achievement, requires coordinated implementation across agencies that historically operate within siloed mandates and competing jurisdictional claims over waterway governance (AllAfrica, 2024). Research indicates that 22 of Nigeria's 36 states rely on water transportation, yet institutional coordination mechanisms for ensuring safe, regulated, and efficient water transport services across this dispersed geography remain underdeveloped relative to the operational challenge (IJRISS, 2025). Furthermore, prosecution rates for safety violations remain low due to weak judicial capacity and insufficient enforcement personnel, allowing operators who violate safety regulations to continue operating without meaningful deterrence (Adepoju & Bekesuomowei, 2023). Thus, governance fragmentation and weak inter-agency coordination significantly limit the effectiveness of Nigeria's inland water transport regulatory framework and undermine the sector's blue economy contribution.

4. **Obsolete Vessel Fleets and Limited Private Sector Investment**

The predominance of wooden canoes, artisanal boats, and poorly maintained vessels in Nigeria's inland water transport system reflects the failure of private sector investment in vessel modernization and the absence of financing mechanisms that would enable operators to upgrade to safer, more efficient watercraft. Most passenger and freight operations along Nigerian waterways are conducted by informal operators using ageing wooden boats that lack basic safety equipment, navigational instruments, and structural integrity for commercial operations (Adepoju & Bekesuomowei, 2023). The Coastal and Inland Shipping (Cabotage) Act 2003, which gave Nigerians the exclusive right to control locally generated seaborne trade, has not effectively stimulated domestic vessel ownership and investment in the inland waterway sector, as the country's ship charter market remains dominated by foreign-owned vessels worth an estimated US$10 billion annually (Businessday, 2023). Although NIWA commissioned 15 boats of varying capacities as part of a pilot scheme to replace traditional wooden canoes, this initiative covers only a fraction of the vast fleet replacement required across the national waterway network (AllAfrica, 2024). Thus, obsolete vessel fleets and limited private sector investment constrain inland water transport capacity, safety, and operational efficiency within Nigeria's blue economy.

1.8 Measures to Mitigate Factors Undermining the Maximization of Inland Water Transport Potentials in Nigeria's Blue Economy

i. **Sustained Investment in Dredging and Navigational Infrastructure**

Nigeria should establish a dedicated inland waterway dredging fund supported by sovereign allocations, public-private partnerships, and international development financing to enable systematic maintenance dredging across the priority network of the Rivers Niger and Benue and their principal tributaries. Sustained dredging of these waterways, combined with the modernization of river ports at Lokoja, Onitsha, and Warri and the construction of agro-logistics terminals and cold-chain facilities, would significantly expand the commercially viable waterway network beyond its current 3,000 to 4,000 kilometre limitation (Nwankwo, 2024). The completion of the Jamaja Inland Port in Lokoja and the integration of inland waterway terminals with road and rail networks in a multimodal logistics architecture would enhance the value of dredging investments by creating intermodal connectivity between waterway freight and national distribution systems (Wikipedia, 2024). These infrastructure improvements would directly increase freight carrying capacity on inland waterways, reduce logistics costs, and improve Nigeria's agricultural supply chain performance. Thus,

sustained investment in dredging and navigational infrastructure is foundational to maximizing the blue economy contribution of Nigeria's inland water transport sector.

ii. **Strengthening Safety Reform and Regulatory Enforcement**

Nigeria should accelerate the implementation of the Inland Waterways Transportation Regulation 2023 through mandatory vessel registration, operator certification requirements, life-saving appliance standards, and prohibition of night travel and overloading enforced through consistent patrol operations and meaningful penalties for violations. NIWA's model of deploying specialized fleets including surveillance boats, safety enforcement boats, water ambulances, and hydrographic survey vessels should be systematically expanded across the ten area offices of the authority to achieve comprehensive waterway coverage (AllAfrica, 2024). International partnerships with the International Maritime Organization (IMO) and regional maritime safety bodies should be leveraged to develop training programmes for vessel operators, safety inspectors, and waterway administrators that bring Nigerian standards into alignment with international best practices for inland water transport safety. Additionally, the establishment of rapid-response emergency rescue infrastructure at regular intervals along principal waterways would reduce fatality rates from accidents by improving response times in remote river communities. Thus, comprehensive safety reform and enforcement strengthening are essential to restoring public confidence in inland water transport and enabling its sustainable growth within the blue economy.

iii. **Inter-Agency Coordination and Blue Economy Governance Integration**

Nigeria should establish a unified Inland Water Transport Coordination Council under the Federal Ministry of Marine and Blue Economy, with membership from NIWA, NIMASA, LASWA, the Nigerian Navy Marine Police, state transport ministries, and relevant environmental agencies, to harmonize regulatory mandates, eliminate jurisdictional overlaps, and ensure coherent policy implementation across the national waterway network. Real-time digital platforms for intelligence sharing, incident reporting, and operational coordination should be developed to enable faster responses to safety incidents and regulatory violations across agencies currently operating with significant information gaps (Ikeogu et al., 2025). The National Blue Economy Policy recently developed should explicitly integrate inland water transport targets, investment benchmarks, and governance milestones to ensure that the sector receives coherent policy attention within the broader blue economy framework. Furthermore, legislative strengthening of NIWA's enforcement mandate and judicial capacity enhancement for waterway safety prosecutions would improve deterrence and compliance across the operator community. Thus, strengthened inter-agency coordination and governance integration are critical to translating regulatory reform into measurable improvements in inland water transport safety, efficiency, and blue economy contribution.

iv. **Stimulation of Private Sector Investment and Fleet Modernization**

Nigeria should develop targeted fiscal incentives including import duty waivers on modern inland watercraft, tax breaks for vessel purchase financing, and concessionary loan schemes administered through development finance institutions to stimulate private sector investment in modern, safety-compliant vessels for passenger and freight operations on the inland waterway network. The establishment of a Cabotage Vessel Financing Fund specifically for inland waterway operations, modelled on analogous instruments in the maritime sector, would provide accessible financing for Nigerian operators seeking to replace wooden canoes with commercial-grade vessels equipped with safety equipment and navigational instruments (Businessday, 2023). Public-private partnership frameworks for the development and management of river port terminals, ferry services, and agro-logistics facilities would mobilize private capital while ensuring public oversight of safety standards and service quality. Furthermore, incentives for domestic shipbuilding and boat fabrication industries would create backward linkages from vessel demand to industrial employment generation. Thus, the stimulation of private sector investment and fleet modernization is essential to transitioning Nigeria's inland water transport from an informal, safety-compromised subsistence mode to a commercially viable contributor to the blue economy.

CONCLUSION

Nigeria's blue economy holds transformative potential for national development, employment generation, food security, and economic diversification, with inland water transport representing one of its most strategically significant yet chronically underutilized components. The country's estimated 10,000 kilometres of waterways, traversing 28 of 36 states and connecting the Rivers Niger and Benue basin to coastal ports and hinterland communities, constitute a natural logistical infrastructure of immense economic value that remains severely constrained by inadequate dredging, obsolete vessel fleets, persistent safety deficits, and fragmented governance. The limitation of commercially viable waterways to between 3,000 and 4,000 kilometres has shifted freight and passenger dependence overwhelmingly onto road networks, producing highway deterioration, urban congestion, supply-chain inefficiencies, and annual economic losses estimated at N33.3 trillion from the underutilization of marine and inland water resources.

Furthermore, persistent challenges including high accident fatality rates of at least 231 deaths in 2024, weak inter-agency coordination, insufficient private sector investment in vessel modernization, and inadequate implementation of the Inland Waterways Transportation Regulation 2023 continue to constrain the sector's capacity to deliver on its blue economy promise. The comparative experiences of Bangladesh, with World Bank-supported investments of US$1.8 billion in inland waterway infrastructure, and India, where the Jal Marg Vikas Project is systematically reducing logistics costs along major river corridors, demonstrate that strategic, sustained, and coordinated investment in inland water transport can produce substantial blue economy dividends. Therefore, while Nigeria has made important normative advances through institutional creation and regulatory reform, the realization of its US$296 billion blue economy potential requires commensurate investment in dredging, safety infrastructure, governance integration, and private sector enablement.

RECOMMENDATIONS

1. The Federal Government of Nigeria should establish a dedicated Inland Waterways Dredging and Infrastructure Fund, supported by sovereign allocations and international development financing, to enable systematic maintenance dredging of the Rivers Niger and Benue and their principal tributaries, targeting the expansion of commercially navigable waterways from the current 3,000 to 4,000 kilometres to at least 6,000 kilometres within a five-year period.

2. NIWA should accelerate the full implementation of the Inland Waterways Transportation Regulation 2023 by expanding its safety enforcement fleet to all ten area offices, establishing mandatory operator certification programmes, and prosecuting overloading and night travel violations consistently across all navigable routes to reduce annual fatality rates below 100 deaths by 2028.

3. A unified Inland Water Transport Coordination Council should be established under the Federal Ministry of Marine and Blue Economy, integrating NIWA, NIMASA, LASWA, state transport authorities, and the Nigerian Navy Marine Police to harmonize regulatory mandates, eliminate jurisdictional overlaps, and enable real-time intelligence sharing across agencies.

4. The Federal Government should introduce targeted fiscal incentives including import duty waivers on modern inland watercraft, concessionary loan schemes through development finance institutions, and a Cabotage Vessel Financing Fund for inland waterway operations to stimulate private sector investment in fleet modernization and the replacement of wooden canoes with commercial-grade, safety-compliant vessels.

REFERENCES

Adepoju, O. O. A., & Bekesuomowei, D. O. (2023). Incessant boat mishaps on Nigerian inland waterways: Advisory way forward analysis. Daha International University Academic Journal, 2(2), 112–118. https://doi.org/10.5281/zenodo.8265162

Allied Market Research. (2024). Inland water freight transport market size, share & forecast to 2033. Allied Market Research. https://www.alliedmarketresearch.com/inland-water-freight-transport-market-A324586

Budgit Foundation. (2024). The untapped potentials and economic benefits of inland water transportation in Lagos. Budgit Foundation. https://budgit.org/the-untapped-potentials-and-economic-benefits-of-inland-water-transportation-in-lagos/

Businessday. (2023). Five opportunities to tap from Nigeria's $296bn blue economy. BusinessDay NG. https://businessday.ng/business-economy/article/five-opportunities-to-tap-from-nigerias-296bn-blue-economy/

Chowdhury, A., Paijwar, A., & Singh, A. (2024). Inland water transport viability assessment through literature review techniques. Pramana Research Journal, 14(5), 19–31.

Comparative Study of Indian Transportation Infrastructure. (2025). Comparative study of the impact of Indian transportation infrastructure on firm-level performance in inland waterways. ScienceDirect. https://doi.org/10.1016/j.tranpol.2025.02.019

Environews Nigeria. (2024). Examining Nigeria's exertions toward exploring blue economy. Environews Nigeria. https://www.environewsnigeria.com/examining-nigerias-exertions-toward-exploring-blue-economy/

Eze, U. P., & Okafor, J. N. (2024). Combating illegal fishing in Nigeria's Exclusive Economic Zone through satellite surveillance. International Journal of Ocean Governance, 6(2), 88–102.

HumAngle. (2025). Over 400 killed in 6 months: The sorry cases of boat mishaps in Nigeria. HumAngle Media. https://humanglemedia.com/over-400-killed-in-6-months-the-sorry-cases-of-boat-mishaps-in-nigeria/

Ibrahim, I., & Dauda, I. (2024). Physical impediments to improved performance in Nigeria's inland waterways sector. International Journal of Research and Innovation in Social Science, 8(5), 112–127. https://rsisinternational.org/journals/ijriss/articles/assessment-of-sustainable-inland-water-transportation-in-lagos-state-nigeria/

Ikeogu, C. C., Pondi, J. G., Ukpere, W. I., & Monyei, F. (2025). Sustainable maritime transport and blue economy drivers as pathways for maritime sector development in Nigeria. Veredas do Direito, 22(6). https://doi.org/10.18623/rvd.v22.n6.4015

Islam, M. W., & Sarker, T. (2021). Sustainable coastal and maritime tourism: A potential blue economy avenue for Bangladesh. ADBI Working Paper 1293. Asian Development Bank Institute. https://www.adb.org/publications/sustainable-coastal-maritime-tourism-potential-blue-economy-avenue-bangladesh

Maersk. (2024). An overview of inland water transport. Maersk Logistics Explained. https://www.maersk.com/logistics-explained/transportation-and-freight/2024/08/16/inland-water-transport

Navigating the Blue Economy in Bangladesh. (2025). Navigating the blue economy in Bangladesh. GSC Online Press. https://gsconlinepress.com/journals/gscarr/sites/default/files/GSCARR-2025-0181.pdf

National Inland Waterways Authority (NIWA). (2024). About NIWA. NIWA. https://niwa.gov.ng/about-us/

Ntona, M., & Morgera, E. (2018). Connecting SDG 14 with the other sustainable development goals through marine spatial planning. Marine Policy, 93, 214–222. https://doi.org/10.1016/j.marpol.2017.06.020

Nwankwo, C. I. (2024). Maritime surveillance systems and fisheries sustainability in West Africa. African Journal of Maritime Studies, 9(1), 45–63.

Patil, P. G., Virdin, J., Diez, S. M., Roberts, J., & Singh, A. (2021). Toward a blue economy: A promise for sustainable growth in the Caribbean. World Bank. https://doi.org/10.1596/978-1-4648-0945-7

Punch. (2025). A strategic thrust for Nigerian inland waterway development. Punch Newspaper. https://punchng.com/a-strategic-thrust-for-nigerian-inland-waterway-development/

Rodrigue, J. P. (2020). The geography of transport systems (5th ed.). Routledge. https://doi.org/10.4324/9780429346323

Ships & Ports. (2024). Deadly boat accidents in Nigeria claim 231 lives in 2024, sparking concern over waterway safety. Ships & Ports. https://shipsandports.com.ng/deadly-boat-accidents-in-nigeria-claim-231-lives-in-2024-sparking-concern-over-waterway-safety/

The Role of Inland Waterways in India's Economy. (2024). The role of inland waterways in India's economy. Manufacturing Today India. https://www.manufacturingtodayindia.com/the-role-of-inland-waterways-in-indias-economy

Umehai, M. C., Opia, O. P. B., Abasubong, K. P., Odia, F. N., & Ejiodu, P. O. (2026). Nigeria's evolving blue economy and sustainability of artisanal fisherfolk livelihoods. FUDMA Journal of Sciences. https://doi.org/10.33003/fjs-2026-1001-4259

World Bank. (2023). Nigeria maritime sector assessment: Surveillance capacity and governance gaps. World Bank Group.