

Unlocking Nigeria's Blue Economy: Strategies for Bridging Human Resource Gaps for Sustainable Maritime Development

Adewale Bashir Adebayo¹

Registry Division,
Federal University of Technology, Ilaro,
Ogun State, Nigeria

Idowu Tosin Adebayo²

Department of Business Administration,
Federal University of Technology, Ilaro,
Ogun State, Nigeria

Email: adewale.adebayo@federalpolyilaro.edu.ng
& ² idowu.adebayo@federalpolyilaro.edu.ng

DOI:10.56201/jhsp.vol.12.no7.2026.pg70.79

Abstract

Boasting an extensive coastline and network of inland waters, Nigeria possesses immense potential within the blue economy. For coastal sub-nationals (such as Lagos, Ondo, Ogun, and the Niger Delta region), this marine frontier offers a strategic pathway to pivot away from oil dependency toward a diversified, resilient developmental paradigm. This study evaluates mechanisms for addressing manpower deficits to catalyze sustainable advancement in Nigeria's maritime ecosystem. Utilizing a qualitative analytical framework, the paper highlights critical bottlenecks, including defective policy execution, ecological damage, data shortages, and specialized skills deficits. The assessment reveals that despite the ratification of the National Marine and Blue Economy Policy (2025), localized implementation remains weak. Consequently, systemic investments in human capital development, institutional fortification, and regulatory compliance are imperative to unlock the sector's value. The study advocates for aggressive capacity building, expanded oceanographic research, and modernized governance architectures.

Keywords: Blue economy, Human capital, Maritime sector, Sustainable development.

1.0 Introduction

The global transition toward a structured 'Blue Economy' marks a fundamental reorientation in how coastal states harmonize commercial expansion with ecological preservation. Popularized during the 2012 Rio+20 United Nations Conference on Sustainable Development, this framework reframes oceans and littoral zones as foundational pillars of low-emission development rather than mere transit corridors. It champions the balanced optimization of marine resources to accelerate fiscal growth, enhance communal livelihoods, and generate employment while maintaining ecological integrity. In emerging economies, this operational model encompasses sustainable aquaculture, marine logistics, offshore renewable energy systems, and marine biotechnology.

In the domestic context, Nigeria's marine landscape represents a critical frontier for macroeconomic diversification, youth employment, and systemic development. However, despite vast aquatic endowments, acute specialized skills shortages severely limit progress. This paper investigates these operational vulnerabilities and presents actionable regulatory interventions.

1.1 The Nigerian Context and the Unemployment Paradox

Possessing an 850-kilometer Atlantic coastline alongside an expansive Exclusive Economic Zone (EEZ), Nigeria occupies a highly strategic maritime position. Historically, over-reliance on a monolithic, petroleum-driven fiscal framework has exposed the state to global market shocks and constrained broader socioeconomic development. Paradoxically, despite various government intervention schemes, systemic unemployment continues to escalate. The national unemployment rate reached 4.2% in the second quarter of 2023, disproportionately impacting urban centers and female cohorts. This persistent joblessness, amplified by institutional vulnerabilities, demands an immediate pivot toward under-utilized sectors. The blue economy presents a viable countermeasure to this employment crisis; preliminary indicators suggest that an optimized maritime framework could dramatically scale up Gross Domestic Product (GDP) and guarantee food security for nearly nine million citizens by 2025.

Nevertheless, structural job shortages, poverty, and wealth disparities remain acute across coastal populations. Capturing this ocean-borne value requires sustained infrastructure financing, institutional overhauls, and rigorous conservation frameworks. Notably, Bayelsa State has emerged as a regional pioneer within the Niger Delta by domesticating federal blue economy frameworks in coordination with the National Universities Commission (NUC) and the United Nations Industrial Development Organization (UNIDO). Given its historical reliance on artisanal fisheries and riverine commerce, Bayelsa leverages a rich aquatic biodiversity profile. Other littoral states must replicate these sub-national frameworks to absorb an expanding youth demographic, establishing the analytical baseline for this study's investigation into maritime human capital development.

1.2 Statement of Problem

A significant mismatch persists between Nigeria's raw marine resource endowments and its actual industrial capacity. Beyond conspicuous logistical deficits, the state suffers from a severe deficit in specialized technical and managerial manpower, stalling the execution of strategic blue economy initiatives.

Sub-national efforts, such as Bayelsa's collaborative frameworks with the NUC and UNIDO, underscore a broader systemic vulnerability: a severe shortage of specialized maritime technicians, outdated vocational programs, and an education system disconnected from real-world maritime labor requirements. Without targeted investments to remedy these human capital deficits, the wealth of this marine frontier will remain inaccessible, isolating coastal youths from the emerging opportunities of the Atlantic economy.

Objectives of the Study

This research presents a systemic analysis of the human resource constraints restricting Nigeria's blue economy. The specific goals are to:

1. Benchmark Nigeria's current maritime resource utilization against international best practices.
2. Map current technical and managerial skills deficits within the aquaculture and maritime logistics industries.

3. Formulate data-driven policy directives designed to align educational curricula with the labor needs of a sustainable marine economy.

2.0 Literature Review

The concept of the blue economy entails the sustainable optimization of ocean resources to stimulate economic expansion, improve communal livelihoods, and preserve aquatic ecosystem health. Academic discourse emphasizes its multi-sectoral scope, spanning commercial fisheries, maritime logistics, ecotourism, and offshore renewable energy. It represents an integrated governance model ensuring responsible resource stewardship across maritime zones.

According to the World Bank, the blue economy prioritizes the sustainable use of ocean assets for economic expansion, improved livelihoods, and ecosystem conservation. Similarly, the European Commission characterizes it as an interconnected network of industrial sectors directly or indirectly tied to coastal and marine environments. The Commonwealth of Nations frames it as an innovative paradigm rooted in marine stewardship. Operationally, it covers traditional and emerging sectors—such as shipping, aquaculture, seabed mining, and ocean energy—alongside non-market environmental services like blue carbon sequestration, coastal protection, and biodiversity conservation. This paradigm decouples economic progress from environmental degradation, recognizing that ocean resources are finite and severely impacted by human activity. Consequently, resolving sustainability threats—including overfishing, industrial pollution, and habitat destruction—requires robust public-private coordination and institutionalized international cooperation.

2.1 Economic Growth

Economic growth reflects a structured, long-term expansion of an economy's productive capacity, signaling a positive trajectory in national wealth and output volume over time. It represents a state's structural capacity to increase the supply of diverse goods and services, quantified through macroeconomic indicators (DFID, 2009). This trajectory is propelled by advancements that optimize industrial efficiency and output value. According to the UK Department for Business Innovation and Skills (BIS) (2011), driving gains in productivity expands an economy's capacity to meet aggregate demand, thereby accelerating growth. The Department for International Development (2009) maintains that sustained economic expansion remains the most dependable mechanism for poverty alleviation and living-standard improvement within developing nations. This expansion is conventionally measured via Gross Domestic Product (GDP) metrics, with per capita income adjustments serving to differentiate raw economic expansion from holistic developmental progress (Tampakoudis et al., 2014; Nafziger, 2012).

2.2 Economic Development

Conversely, economic development encompasses broader transformations that elevate the qualitative well-being, health, and living standards of a population, whereas economic growth remains bound to quantitative increases in monetary output (Tampakoudis et al., 2014). Odey (2023) notes that the blue economy paradigm seeks to achieve developmental milestones without inducing ecological damage, emphasizing resource conservation. Lee et al. (2020) state that the success of marine economic frameworks depends on aligning human commercial activities with the natural reproductive cycles of marine ecosystems.

Given that oceans cover nearly 70% of the earth's surface, they provide critical regulatory, mineral, and nutritional assets (Hamisu, 2019). Beyond climate regulation and resource supply, they

provide highly efficient transport corridors for international trade (Abdullahel, 2017). Preserving marine ecosystem health is therefore directly linked to human survival (Silver et al., 2015), requiring governance models that balance industrial extraction with ecological rejuvenation (Potgieter, 2018). The UN 2030 Agenda explicitly links marine sustainability with developmental progress via Sustainable Development Goal (SDG) Target 14.7, which aims to boost the economic returns of Small Island Developing States (SIDS) and developing coastal areas through sustainable fisheries, structured aquaculture, and eco-tourism (UNCTAD, 2014). Within Nigeria, the Niger Delta is positioned as a critical testing ground for these sustainable blue economy strategies, seeking to transition away from extractive ecological damage toward long-term social inclusion and green growth.

2.3 Opportunities in Nigeria's Blue Economy

A significant portion of Nigeria's coastal population depends entirely on artisanal fishing. By modernizing this sector, the state can secure substantial export revenue, enhance food security, and generate sustainable employment. Although current outputs are constrained by overfishing and regulatory deficits, transitioning to standardized fisheries management can revitalize coastal communities and position Nigeria as a prime seafood exporter.

Parallel opportunities exist within maritime transport and logistics. While Nigerian ports are central to regional trade, their operational capacity is restricted by bureaucratic delays, structural congestion, and obsolete infrastructure. Upgrading port infrastructure and simplifying regulatory processes could transform the nation into a premier West African maritime hub, lowering transaction costs and attracting foreign direct investment.

Offshore renewable energy—specifically wind, tidal, and wave power—presents another critical frontier. Developing ocean-based energy systems would diversify the national power grid, lower carbon emissions, and attract international climate finance, while creating high-skill technical positions. Furthermore, coastal ecotourism remains heavily under-exploited. The nation's unique coastal topographies, cultural assets, and marine ecosystems could attract significant domestic and international tourist traffic. Realizing this requires targeted security, logistical, and environmental upgrades, ensuring that tourism revenues help fund marine conservation programs.

2.4 Human Resource Gaps in Nigeria's Blue Economy

Cultivating a competitive blue economy requires a highly trained workforce. It is essential to establish academic and vocational programs tailored specifically to marine logistics, oceanography, coastal engineering, and sustainable hospitality management. Expanding local technical capacity through public-private-academic partnerships will ensure that Nigeria's marine transition is led and sustained by domestic experts.

2.5 Addressing Environmental and Regulatory Challenges

Unlocking this maritime potential requires mitigating severe environmental and regulatory threats. Industrial marine pollution, Illegal, Unreported, and Unregulated (IUU) fishing, and unplanned coastal development pose direct threats to marine habitats. Strengthening maritime governance through strict plastic waste management, rapid oil-spill response systems, and regional maritime security pacts with neighboring Gulf of Guinea states is crucial to establishing a secure investment climate.

2.6 Policy Context

Before the establishment of the National Marine and Blue Economy Policy in May 2025, sub-national entities within the Niger Delta relied on fragmented domestic and international environmental mandates. The absence of localized marine conservation laws highlights the need for a comprehensive policy framework to map, manage, and monitor protected marine zones. This study reviews several foundational instruments:

2.6.1 United Nations Convention on the Law of the Sea (UNCLOS) 1982

UNCLOS serves as the definitive international legal framework governing maritime boundaries, sovereign jurisdictions, and oceanic resource management. Duly ratified by Nigeria, its provisions are integrated via instruments like the Maritime Zones Act, which delineates the territorial sea, contiguous zone, and EEZ rights, binding the nation to global marine governance and conservation standards (United Nations, 2023).

2.6.2 The Sea Fisheries Act 1992

This act forms the baseline statutory tool regulating commercial fishing within Nigeria's territorial waters and EEZ. It dictates mandatory registration and operating conditions for motorized fishing vessels, backed by penal sanctions, vessel forfeitures, and criminal liability for non-compliance (UNDP, 2023).

2.6.3 Nigeria Fisheries Regulations, 2011

This text provides operational guidelines under the Sea Fisheries Act, focusing on stock preservation. It mandates catch limits, defines closed fishing seasons, outlaws destructive harvesting methods, and protects endangered marine species to counter localized overfishing (Federal Department of Fisheries, 2011).

2.6.4 Aquaculture Regulations 2013

Enacted to manage the rapid expansion of commercial aquaculture amid rising animal protein demands, this framework mandates standard licensing and health checks for hatcheries and fish farms, reducing ecological pressure on wild marine stocks (Federal Ministry of Environment, 2011).

Additional relevant legislation includes:

- **The Harmful Waste (Special Criminal Provisions) Act:** Criminalizes the disposal of toxic materials into territorial waters.
- **The NESREA Act:** Establishes the primary institutional framework for enforcement and environmental monitoring across aquatic ecosystems.
- **MARPOL Convention:** Incorporates global standards against ship-source pollution into domestic maritime enforcement.

Despite these legislative instruments, the Niger Delta continues to experience persistent environmental degradation and socio-economic exclusion, largely due to historical oil-sector externalities and weak regulatory compliance. This underscores the need to embed blue economy principles into national development and community engagement plans.

2.6.5 Evaluation of the National Marine and Blue Economy Policy 2025

The newly ratified 10-year National Marine and Blue Economy Policy (2025–2034) establishes a strategic roadmap to leverage marine and inland water assets for economic diversification and

jobs. The strategy heavily utilizes Public-Private Partnerships (PPPs) to attract capital into port infrastructure, biotechnology, ocean energy, and coastal tourism, backed by structured monitoring and evaluation frameworks to ensure institutional accountability.

2.7 Opportunities

With an expansive coastline and substantial inland waterways, Nigeria can drive long-term development through its maritime assets. Maximizing this requires coordinated policy execution and stakeholder collaboration. Key opportunities include:

- **Macroeconomic Diversification:** Transitioning from fossil-fuel reliance toward diversified marine industrial outputs.
- **Job Creation:** Absorbing youth demographics into logistics, biotechnology, and aquaculture.
- **Policy Alignment:** Direct integration with national development agendas, specifically the maritime components of the Renewed Hope framework.

2.7.1 Policy Options

Nigeria's maritime sub-nationals are well-positioned to leverage port services, logistics, and shipbuilding. However, operational inefficiencies, structural delays, and high clearing costs at domestic ports often drive commercial traffic to regional competitors like Togo, Benin, and Ghana. Contrastingly, data from 2024 reveals that the Port of Antwerp-Bruges in Belgium processed 278 million tonnes of cargo (13.5 million TEUs), generating \$33.3 billion in structural added value—equivalent to 7.0% of Belgium's national GDP (Punch Newspapers, 2025). To recover lost ground, Nigerian coastal states must modernize port infrastructure, digitize logistical interfaces, and establish multimodal transport networks, drawing lessons from successful maritime models like Singapore and the Netherlands.

3.0 Methodology

This research adopts a qualitative analytical approach, using secondary data from statutory policy documents, academic literature, and institutional records. Content analysis was applied to evaluate current legislative frameworks and identify structural human resource gaps within the maritime sector.

4.0 Key Findings

The analysis reveals several critical systemic issues:

- Coastal states have largely failed to domesticate the national 2025 Marine and Blue Economy Policy.
- Enforcement of UNCLOS mandates remains weak across sub-national maritime zones.
- Data gaps exist regarding aquaculture permits and commercial vessel registration within regional waterways.
- The Niger Delta experiences ongoing ecological damage, wealth disparities, and weak regulatory enforcement.
- The lack of structured monitoring frameworks limits accountability regarding IUU fishing practices.
- Optimized marine resources offer a proven pathway for economic diversification and youth employment.

4.1 Discussion of Findings

The assessment reveals a clear gap between policy design and practical implementation. While comprehensive legal instruments exist, their impact is limited by institutional weaknesses and poor enforcement. Furthermore, acute technical skills deficits continue to slow industrial expansion, highlighting the need for specialized maritime education. Based on these insights, the study highlights three core policy interventions:

1. **Inland Waterways Revitalization:** Modernizing riverine transport corridors to stimulate trade, create jobs, and empower coastal youth.
2. **Marine Research Infrastructure:** Establishing specialized research hubs through partnerships with the NUC and UNIDO to drive local technological innovation.
3. **Regulatory Enforcement:** Enforcing existing maritime laws to unlock non-oil revenue, boost ecotourism, and support coastal communities.

5.0 Conclusion

Nigeria's blue economy represents a vital frontier for long-term development, but unlocking it requires targeted human capital investments and structural governance reforms. Aligning national maritime strategies with SDG 14 will support global ocean conservation while positioning the country as a leader in sustainable marine management.

By prioritizing infrastructure upgrades, sustainable extraction practices, and specialized vocational training, the nation can build a resilient blue economy that supports both current and future generations. Moving away from an oil-dependent model is essential to correct the environmental and economic imbalances that have historically affected coastal communities.

5.2 Recommendations

The study presents the following strategic recommendations for federal and sub-national action:

1. **Legislative Harmonization:** The National Assembly and the Ministry of Marine and Blue Economy should consolidate all historical maritime laws into a unified, modern statutory code.
2. **Inter-Ministerial Training Programs:** Establish joint initiatives across the Ministries of Education, Science, Transport, Tourism, and Labour to train the workforce in sustainable practices, such as eco-friendly fishing, green transport, and marine conservation.
3. **Scientific Investment:** Partner with the Ministry of Innovation, Science, and Technology to fund specialized research in marine biotechnology, oceanography, and offshore renewable energy.
4. **Public-Private Partnerships (PPPs):** Create structured incentives, including tax concessions and land rebates, to attract private investment into port logistics, coastal energy, and marine tourism.
5. **Pollution Mitigation:** Implement strict regulatory measures against plastic pollution and industrial waste to safeguard coastal biodiversity.
6. **Community Sensitization:** Work with the National Orientation Agency to educate coastal and rural populations on the economic opportunities within the blue economy.

7. **Waterway Roadmaps:** Direct the National Inland Waterways Authority to draft community-focused infrastructure plans in coordination with the NUC and UNIDO.
8. **Sub-National Research Hubs:** Coastal State Governments should directly fund regional Marine Research Hubs.
9. **Localized Awareness Campaign:** Sub-nationals must launch dedicated awareness campaigns to engage local communities in blue economy projects.
10. **Policy Review Cycle:** Establish a mandatory five-year review schedule to update and adapt national blue economy policies.

References

- Abdullahel, B. (2017), Our Oceans and the Blue Economy: Opportunities and Challenges, 10th International Conference on Marine Technology Available at <https://www.sciencedirect.com/science/article/pii/S1877705817332447>
- Benzaken, D; Voyer, M; Pouponneau, A. and Hanich, Q. (2022), Good Governance for Sustainable Blue Economy in Small Islands: Lessons Learned from the Seychelles Experience. *Frontiers in Political Science*
- Bertazzo, S. (2018), What on Earth is the 'Blue Economy'? <https://www.conservation.org/blog/what-on-earth-is-the-blue-economy>
- BIS (2011), Sources of Economic Growth. UK: Department of Business Innovation and Skill
- DFID (2009), Growth: Building Jobs and Prosperity in Developing Countries. UK: Department for International Development
- Eke, I.C and Eke, F.A. (2024), Institutional Quality and Economic Resilience: Panacea for Potential Long-Term Economic Growth in West Africa. *Gusau Journal of Economics and Development Studies* 5 (1), 123-143.
- European Commission. (2020), Blue Retrieved Growth. Retrieved from https://ec.europa.eu/maritimeaffairs/policy/blue_growth_en
- Federal Department of Fisheries. (2011), Annual fisheries statistics report. Abuja: Federal Ministry of Agriculture and Rural Development.
- Federal Ministry of Environment (2021), National Integrated Coastal Zone Management Framework. <https://environment.gov.ng/documents/iczm-framework>.
- Federal Ministry of Marine and Blue Economy. (2023). Nigeria's Blue Economy. An Article by The Punch Newspapers, Maximise the potential of maritime economy 19th May 2025.
- Folami, O. O. (2017), The Relevance of UNCLOS to the Nigerian legal system: Challenges and prospects. In *Nigerian Journal of Maritime Law*, 35(2), 112–128.
- Folami, T.O. (2017), Towards an integrated ocean governance regime and implementation of the Sustainable Development Goal 14 in Nigeria, https://commons.wmu.se/cgi/viewcontent.cgi?article=1591&context=all_dissertation.
- Gunter Pauli (1994), "The Blue Economy: 10 years, 100 innovations, 100 million jobs". A publication by the Federal Ministry of Marine and Blue Economy, 2025.
- Hamisu A. (2019), A study of Nigeria's blue economy sector. Potential with particular reference to the oil and gas. An unpublished dissertation submitted to the World Maritime University in partial fulfilment of the requirement for the award of the degree of MSc in Maritime Affairs.
- Leal, M. C., et al. (2016), Marine Biotechnology: Achievements and Prospects. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4990857/>
- McKinsey (2023), What is Economic Growth? <https://www.mckinsey.com/>
- Nafziger, E. W. (2012), Economic Development. New York: Cambridge University Press.
- National Bureau of Statistics (NBS) Nigeria., 2023. Nigeria unemployment Survey Report 2022, Abuja.
- Purcell, N. (2023), What is the Blue Paris. <https://bluerobotics.com/what-is-the-blue-economy/>
- Silver, J. J., Gray, N. J., Campbell, L. M., Fairbanks, L. W. & R. L. Gruby (2015), Blue economy and competing discourses in international oceans governance. *The Journal of Environment & Development* 24(2), 135-160.

- Tampakoudis, I.A, Fylantzopoulou, D & Nikandrou, K (2014), Examining the Linkages between GDP Growth and Sustainable Development in the Eurozone. Journal of Economics and Business. Vol. XVII, No 2
- United Nations Development Programme (UNDP). (2023), Niger Delta Biodiversity Conservation Programme Report. <https://www.undp.org/nigeria/publications/niger-delta-biodiversity>. Vanguard newspaper, 2024.
- World Bank (2017), Infographic: What is the Blue Economy? <https://www.worldbank.org/en/news/infographic/2017/06/06/blue-economy>
- World Bank and United Nations Department of Economic and Social Affairs (2017), The Potential of the Blue Economy: Increasing Long-term Benefits of the Sustainable Use of Marine Resources for Small Island Developing States and Coastal Least Developed Countries. Washington DC: World Bank Publications.
- World Commission on Environment and Development (1987), Our Common Future UN: Oxford University Press.