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A comparative review of the historical development, current status, challenges, and strategic interventions in fisheries and aquaculture development in Sierra Leone and Nigeria

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Abstract

Though often overlooked, aquaculture and fisheries play major roles in feeding populations, creating jobs, and supporting economies across West Africa, especially within Sierra Leone and Nigeria. This review comparatively examines the historical evolution, current status, key challenges, and strategic interventions shaping fisheries and aquaculture development in both countries. In Sierra Leone, one out of every two people relying on coastal work depends on fishing activities for survival. Fisheries contribute nearly 80% of animal protein intake and support roughly half a million livelihoods, with artisanal fisheries leading production. However, the sector faces persistent challenges including illegal, unreported, and unregulated (IUU) fishing, weak governance structures, limited infrastructure, and low aquaculture productivity notwithstanding substantial inland water potential. In contrast, Nigeria possesses more extensive aquatic resources and a larger, more diversified fisheries economy. Although artisanal fishing supports much of the nation's food needs, farming aquatic species, especially African catfish has grown fast, making Nigeria top producer in sub-Saharan Africa. Yet even with such progress, gaps in fish availability remain large due to high production cost, damage to natural systems, weak oversight structures, and limits on long-term industry development. Through synthesis of experiential studies and institutional reports, this review recognizes shared structural challenges, including overexploitation of capture fisheries, infrastructural gaps, limited access to finance, and governance fragmentation. Policy efforts, shaped through national and international cooperation, pivot toward upgrading aquaculture networks, improving skills, reshaping regulations, along with balancing ecological limits against production goals. Though Nigeria advances faster in cultivating aquatic species, Sierra Leone reveals hidden possibilities within its natural and human resources. Greater coherence in authority structures, deeper financial engagement, together with methods that do not compromise future stocks and support sustainable food and nutrition security in both countries.

Keywords: Aquaculture**,** sierra leone, Nigeria, historical evolution, capture fisheries, illegal fishing

Introduction

Aquaculture along with fisheries shape key parts of global diets, especially across poorer nations relying on aquatic foods for nutrition, jobs, and financial balance. West African nations like Sierra Leone and Nigeria possess abundant aquatic resources and rich fisheries heritage that contribute significantly to food security. Even so, deep-rooted issues tied to management flaws, ecological shifts, and systemic weaknesses limit long-term success within these industries there.

In Sierra Leone, capture fisheries provide most of the animal protein eaten, making it essential for feeding the population (FAO, 2022) [7]. Along the coast, rivers, and wetlands, local fishing methods dominate, relying on basic tools and small boats. Around half a million individuals rely on this work, often selling their catch each day to meet household needs (World Bank, 2023) [10]. Though informal, these activities form a backbone of survival in many shoreline villages. From estuaries to oceanfront's, waterways support a network of modest but persistent efforts to maintain food supply and jobs. Most of the country's fish comes from small-scale fishing, supplying close to 80 percent of national output while supporting diets in riverside and shoreline areas (FAO, 2022). Offshore waters see activity from large commercial operations, often run by overseas companies, tapping into marine stocks beyond local shores. Revenue flows to authorities via permits and sales abroad, especially involving premium seafood like prawns (Government of Sierra Leone, 2018; FAO, 2021) [9].

Regardless, Sierra Leone's fisheries struggle with lasting survival issues. Because illegal, unreported, and unregulated (IUU) fishing continues, depleting fish stocks, state income shrinks, and coastal livelihood lose stability (Belhabip *et al.*, 2016; FAO, 2021). Where oversight is thin, monitoring fails, and basic systems lag, losses grow worse, management falters over time (Seto *et al.*, 2017). With wild catches falling while hunger for seafood climbs, aquaculture gains ground as one path forward. Introduced during the 1970s, aquaculture in Sierra Leone centered mostly on freshwater

types like Nile tilapia (*Oreochromis niloticus*), alongside African catfish (*Clarias gariepinus*). Still, output stays modest because of hurdles such as; scarce technical know-how, poor availability of good-quality seed and feed, weak backing from institutions (FAO, 2019; WorldFish, 2017). Despite this, large opportunities exist, more than 690,000 hectares of inland valley swamps offer strong natural advantages, backed by helpful water systems ready for wider use (FAO, 2021). Working with global agencies, national authorities have rolled out key actions targeting stronger oversight of fisheries, better farm yields, upgraded facilities, along with long-term stewardship of aquatic resources (World Bank, 2025; WorldFish, 2017) [11].

Similarly, Nigeria possesses roughly 853-kilometer shoreline, freshwater networks like the Niger and Benue rivers stretch across the land, joined by countless lakes and wetlands where wild catch and farmed fish thrive (FAO, 2020) [12]. Because many families rely on affordable sources of protein, fish supplies matter deeply for daily meals, especially among low-income earners (FAO, 2022). More than twelve million individuals are employed through fishing related efforts, whether fish production, transporting, processing, exporting or selling them locally (World Bank, 2018; FAO, 2020) [9, 12]. Small-scale operations lead national output, accounting for most of what is pulled from inland water bodies each year while anchoring survival strategies in villages near coasts and rivers alike (FAO, 2020). Now here is aquaculture more vital in Nigeria, where it helps close growing gaps between fish supply and demand. Leading sub-Saharan Africa in output, the country stands out as global annual harvests surpass 300,000 metric tons (FAO, 2022; WorldFish, 2020). African catfish (*Clarias gariepinus*), shapes most farming activity; fast development, resilience across environments, and steady buyer interest explain its dominance above 70 percent of total cultivated volume by 2020 figures. Growth in this field fuels jobs, boosts earnings, supplies local markets all especially evident outside major cities and deep within countryside regions since at least the late 2010.

Even with progress, Nigeria still falls short in matching local fish output to yearly demand, more than 3.6 million metric tons, so imports fill much of the shortfall (FAO, 2022; World Bank, 2018) [7, 9]. Obstacles hold back growth among them includes: expensive feed, scarce financing, broken supply chains, missing refrigeration and processing units, thin support networks for farmers, along with policies that shift without warning (WorldFish, 2020; World Bank, 2018) [9]. Pressures from dirty water, damaged ecosystems, and shifting weather patterns add strain on both wild stocks and farm-raised fish (FAO, 2020) [12].

Despite differing trajectories, both countries depend significantly on small-scale fishing activities, face expanding fish farming efforts, experience mounting strain on aquatic stocks owing to demographic increases and higher need for dietary protein. Still, Nigeria advances faster in cultivating aquatic species because of active business engagement, better processing and distribution networks, along with focused backing from organizations (FAO, 2021; WorldFish, 2020). Meanwhile, Sierra Leone holds large room for growth in this area thanks to vast freshwater systems and suitable natural settings. To tackle these issues, policy changes along with targeted programs have been rolled out by both nations, measures meant to reinforce how fisheries are managed while also pushing forward aquaculture growth. Infrastructure upgrades form another piece of this work, alongside moves designed to make supply chains run smoother. Outside backing comes into play here, provided through groups like FAO, WorldFish, and the World Bank, each lending support that shapes outcomes. The shared aim entails better output levels paired with responsible stewardship of natural stocks. Underpinning much of this is a drive toward stronger access to nourishing food, grounded in practical steps rather than broad claims (FAO, 2022; World Bank, 2018; WorldFish, 2020) [7, 9, 12].

This review examines how fisheries and aquaculture have evolved over time in Sierra Leone and Nigeria, looking at where things stand today. Though differing in scale, both nations face hurdles tied to resources, governance, and environmental strain. Because past efforts show mixed results, recent policies attempt to balance growth with ecological limits. While one country focuses on coastal rehabilitation, the other invests in inland pond systems. Despite gaps in data collection, patterns emerge when comparing official records alongside field observations. Where infrastructure lags, small-scale operators adapt using local knowledge. Yet access to markets remains uneven due to transport bottlenecks. Innovation appears slowly, often shaped by community needs rather than top-down mandates. As climate shifts affect yields, some regions shift species or timing to maintain output. Progress hinges less on technology alone but on coordination across agencies. Lessons from pilot programs suggest that involving fishers early leads to better outcomes. Long-term success depends on aligning national plans with village-level realities.

1. Methodology

This study adopted a comparative systematic review methodology to examine the historical development, current status, challenges, and strategic interventions in fisheries and aquaculture development in Sierra Leone and Nigeria. The review followed a structured approach to ensure comprehensive coverage, transparency, and replicability.

A comprehensive literature search was conducted using major academic databases, including Scopus, Web of Science, ScienceDirect, and Google Scholar. In addition, grey literature and institutional publications were retrieved from reputable international and national organizations such as the Food and Agriculture Organization, World Bank, WorldFish, the Federal Ministry of Agriculture and Food Security, and the Ministry of Fisheries and Marine Resources. The search included publications from 1980 to 2024 to capture both historical and contemporary developments. Keywords used in the search included combinations of: fisheries development, aquaculture development, fish production, fisheries management, aquaculture constraints, fisheries policy, and West Africa, combined with the country names using Boolean operators.

Source: Mapchart.net

Fig 1: Map of Africa Showing Sierra Leone and Nigeria

Historical Development

1. Historical Development of Fisheries and Aquaculture in Sierra Leone

Fisheries in Sierra Leone has long centered on small-scale ocean-based operations, supporting jobs and feeding coastal communities (FAO, 2020). Along river systems and flooded lowlands, people also fish inland. Although limited, farming of aquatic species started during the 1970s, driven by state-led trials backed by international funding (World Bank, 2018) [9]. Aquaculture growth stayed slow, technical skills were missing, institutions lacked strength, while private investment showed little interest (FAO, 2020). Fisheries and aquaculture faced major setbacks during the 1991–2002 conflict, as key facilities were damaged while output steadily declined (Thorpe *et al.*, 2009) [3]. Years after the war ended, efforts in Sierra Leone began focusing on fixing fishing facilities while also encouraging aquaculture, yet growth remains modest when set beside Nigeria's pace (World Bank, 2018) [9].

2. Historical Development of Fisheries and Aquaculture in Nigeria

Fisheries in Nigeria started small, carried out by hand along rivers, lakes, and shorelines with basic tools like woven baskets, lines, and mesh nets (FDF, 2017). From the middle of the twentieth century, efforts to raise fish in controlled settings took root in tilapia farming kicked off experimentally in Lagos during 1951, followed by state-led initiatives including hatcheries like the one at Panyam in Plateau State (FAO, 2005). However, four stages mark how fish farming evolved in Nigeria. Starting quietly in village ponds, it slowly gained structure over time. Then came government interest, which brought more organization. Later, private businesses began stepping in, shifting the landscape further;

1. Subsistence fisheries era (pre-1950)
2. Experimental aquaculture phase (1950–1970)
3. Government-driven expansion phase (1970–1990)
4. Commercial aquaculture expansion phase (1990–present)

Starting early in the decade, state-led efforts like the National Accelerated Fish Production Programme (NAFPP) helped reshape fish farming across regions. One key initiative, the Fish Seed Multiplication Projects, expanded access to quality breeding stock through targeted hatchery upgrades. Rather than relying on imports, local production gained strength under these measures. The Agricultural Transformation Agenda further reinforced progress by aligning fisheries with broader rural growth strategies. Evidence from federal reports in 2014 [15] confirms a measurable rise in output during this period. From 1990 to 2020, aquaculture output rose sharply, jumping from under 20,000 tones to more than 300,000. This growth followed rising interest in fish as a source of dietary protein. Private companies played a major role during this period. Their involvement helped scale up operations significantly (FAO, 2022; WorldFish, 2021).

Current Status of Fisheries and Aquaculture

1. Current Status in Sierra Leone

Fisheries play a major role in Sierra Leone's economic activity, making up around twelve percent of gross domestic product; it supports livelihoods for more than half a million individuals through both primary jobs and related sectors (World Bank, 2018) [9]. The industry includes these parts: Artisanal marine fisheries (dominant), Industrial marine fisheries, Inland fisheries, Small-scale aquaculture. Aquaculture output stays modest when set beside wild fish harvests, focusing mostly on raising tilapia and catfish

within pond systems (FAO, 2020). Despite efforts to diversify, reliance on marine fisheries persists across households and trade markets (Thorpe *et al.*, 2009) [3]. While inland options grow slowly, ocean-based catches still shape food availability along with foreign income streams (Thorpe *et al.*, 2009) [3]. Coastal communities continue drawing sustenance and earnings largely from sea resources (Thorpe *et al.*, 2009) [3]. Even with alternative paths emerging, saltwater fishing dominates both consumption patterns and national receipts (Thorpe *et al.*, 2009) [3].

2. Current Status in Nigeria

Nearly topping continental charts, Nigeria leads Africa in aquaculture output while ranking among its foremost fish-producing nations (FAO, 2022). Key indicators include: Total fish production of over 1 million tons annually, aquaculture production over 300,000 tones annually, employment opportunities availing more than a million and a half individuals hold jobs. Also, African Catfish (*Clarias gariepinus*) stands among the most commonly farmed fish. Following close behind are various tilapia species, raised widely across different regions. Carp, too, play a central role in aquaculture systems worldwide. These three groups form the backbone of much fish farming activity today. Though aquaculture plays a major role in local fish production, Nigeria brings in more than 700,000 tones each year because consumption outpaces output (WorldFish, 2021 [13]; FMARD, 2014). Small- to medium-sized operations still lead aquaculture, yet larger businesses appear more often now (FAO, 2022) [7].

Major Challenges

1. Challenges in Sierra Leone

The fisheries and aquaculture sector in Sierra Leone faces more severe constraints, including

Limited technical expertise: Lack of trained aquaculture professionals and extension services (FAO, 2020) [5].

Weak institutional capacity: Limited government support and policy implementation (World Bank, 2018) [9].

Post-conflict infrastructure damage: Civil war destruction significantly affected aquaculture development (Thorpe *et al.*, 2009) [3].

Limited investment: Low private sector participation and funding constraints (FAO, 2020).

Dependence on capture fisheries: Aquaculture remains underdeveloped (World Bank, 2018) [9].

2. Challenges in Nigeria

Despite significant growth, Nigeria's fisheries and aquaculture sector faces numerous constraints

High cost of fish feed: Feed accounts for 60–70% of aquaculture production costs (Gabriel *et al.*, 2007) [4].

Limited access to finance: Many fish farmers lack access to affordable credit facilities (FMARD, 2014).

Poor infrastructure: Inadequate electricity, transportation, and cold storage facilities limit productivity (FAO, 2022).

Technical constraints: Shortage of skilled manpower and extension services (FDF, 2017).

Environmental challenges: Climate change, flooding, and water pollution affect aquaculture productivity (WorldFish, 2021).

Strategic Interventions

1. Strategic Interventions in Sierra Leone

Sierra Leone has implemented several strategies to strengthen fisheries and aquaculture:

Feed Salone Strategy: Government and World Bank initiative to promote fisheries development (World Bank, 2018) [9].

Community fish farming programs: Development of rural aquaculture (FAO, 2020) [5].

Capacity building: Training fish farmers and strengthening extension services (FAO, 2020) [12].

Infrastructure rehabilitation: Reconstruction of fisheries infrastructure post-civil war (Thorpe *et al.*, 2009) [3].

2. Strategic Interventions in Nigeria

Nigeria has implemented several strategic measures to promote aquaculture development:

Government programs: Agricultural Transformation Agenda and National Aquaculture Strategy (FMARD, 2014) [15].

Research and development: Fisheries research institutes and universities provide technical support (FAO, 2022).

Private sector participation: Rapid growth of commercial fish farms (WorldFish, 2021) [13].

Improved seed production: Hatchery development programs (FDF, 2017) [11].

Comparative Analysis

Table 1: Comparative Analysis of Fisheries Development in Sierra Leone and Nigeria

Parameter	Sierra Leone	Nigeria
Development stage	Emerging	Advanced and commercial
Aquaculture production	Low	High
Private sector involvement	Weak	Strong
Institutional support	Limited	Strong
Major constraint	Technical capacity and investment	Feed cost and infrastructure
Growth potential	Very high	High

Conclusion

Though often overlooked, aquaculture and fisheries play key roles in feeding people, creating jobs, and supporting economies across Sierra Leone and Nigeria. Rooted deeply in tradition, harvesting fish from rivers and oceans has long shaped how communities eat and survive along shores and inland areas. Coastal villages rely heavily on small-scale fishing, which continues to anchor daily life and local trade in both nations. With many depending on fish as their main source of protein, Sierra Leone sees the industry as vital, yet faces persistent challenges like unauthorized fishing activities and poor oversight. Infrastructure gaps further slow progress, while fish farming lags behind despite natural advantages such as plentiful wetlands and suitable weather conditions. Even though current output in aquaculture is low, wide stretches of swampy land suggest room for growth if supported properly.

So far, Nigeria shows stronger gains in aquaculture, now topping sub-Saharan Africa in output. Thanks to fast growth in African catfish farms, local fish availability improves alongside jobs and broader economic benefits. Still, deep-rooted problems remain: costly inputs, poor transport networks, strain on ecosystems, reliance on foreign fish imports, and disjointed oversight among agencies. Similar hurdles shape both nations' sectors, overfished wild stocks, lax rules, skill gaps, and scarce funding along the entire fisheries and aquaculture value chain.

Despite progress, lasting change hinges on consistent collaboration over time. Government actions combined with support from local and international actors have boosted performance in managing fish stocks, expanding farm output, and refining supply networks. Still, real advancement depends less on isolated projects than on sustained investment in updated regulations, better tools, physical systems, and business involvement. Moving forward, balanced growth in farmed fish production and wild harvest oversight offers a practical route to a more stable diets, fewer imports, stronger incomes, and sturdier economies across Sierra Leone and Nigeria.

Recommendations

Based on the comparative analysis, the following strategic recommendations are proposed

1. **Strengthening Fisheries Governance and Regulatory Enforcement**

Fisheries oversight could improve if both nations upgrade how they track, regulate, and inspect activities at sea. Strengthening agencies responsible for enforcement would support more consistent monitoring. Licensing procedures may become more reliable through systematic updates. Digital tools, like electronic reporting or satellite tracking might play a role in real time supervision. Working together across borders can lead to better coordination when managing shared fish stocks.

2. **Promoting Sustainable Aquaculture Development**

Starting with better fish seeds, state support can boost farm grown seafood output. When hatchery systems get upgraded, results follow naturally. Access to low-cost, balanced nutrition for stock matters just as much. Modern tools on ponds like aeration or monitoring help farmers do more with less. Training, shared through field advisors, builds practical skill over time. Feed factories near farming zones cut delays and waste. Productive units mean steady supply without draining wild stocks. Progress comes not from single fixes but linked improvements across the chain.

3. **Improving Infrastructure and Value Chain Efficiency**

Cold storage units, processing hubs, transport routes, plus links to markets need stronger funding so spoilage drops after harvest. Quality of seafood holds up better when these systems work well. Profits grow for those who farm or catch fish if supply chains gain support. Building resilience here means less waste overall. Stronger access to markets lifts returns across the board.

4. **Enhancing Access to Finance and Private Sector Participation**

Getting small fish farmer and farm-raised seafood makers into loan programs, funding pools, or investor networks can spark expansion in the field. To help new ideas take root and reach markets better, collaboration between government bodies and business groups deserves a push.

5. **Strengthening Research, Extension, and Capacity Building**

Funding better study of aquaculture could come from public bodies alongside universities, shifting focus toward smarter yields through updated practices. Learning programs might strengthen worker skills, while outreach helps apply new methods where they are needed most. Progress in handling illness among stocks often follows when knowledge spreads beyond labs into daily work. Care for surrounding ecosystems tends to rise once practical science guides decisions on water use and waste.

6. **Promoting Environmental Sustainability and Climate Resilience**

Fisheries managed through ecosystem approaches, together with protected habitats, support healthier waters. Climate-aware farming of aquatic species strengthens resilience over time. Protection of underwater environments grows more effective when these methods combine. Long-term yields depend on such integrated strategies. Success follows where nature-informed practices take root.

7. **Enhancing Policy Coordination and Institutional Frameworks**

For policies to work well, different groups, like government bodies, aid organizations, and business actors must align their efforts more closely. Without smoother collaboration, repeated actions can waste resources. Working together wisely helps avoid overlap. Progress in key sectors depends on steady cooperation across these varied players.

Conflict of Interest

The authors declare that they have no conflict of interest. This review was conducted independently and was not influenced by any funding agency, commercial entity, or organization with a financial interest in the outcomes of this study.

References

1. Belhabib D, Sumaila UR, Le Billon P. Illegal fishing and fisheries management in West Africa. Marine Policy, 2016, 74. https://doi.org/10.1016/j.marpol.2016.09.001
2. Seto KL, Belhabib D, Mamie J, Copeland D, Vakily M, Seilert H, *et al*. War, fish, and foreign fleets: The marine fisheries catch of Sierra Leone (1950–2015). Marine Policy, 2017, 83. https://doi.org/10.1016/j.marpol.2017.05.036
3. Thorpe A, Whitmarsh D, Ndomahina E, Baio A, Kemokai M, Lebbie T. Fisheries and failing states: The case of Sierra Leone. Marine Policy, 2009, 33(3). https://doi.org/10.1016/j.marpol.2008.09.001
4. Gabriel UU, Akinrotimi OA, Bekibele DO, Onunkwo DN, Anyanwu PE. Locally produced fish feed: Potentials for aquaculture development in Nigeria. African Journal of Agricultural Research, 2007, 2(7).

5. Food and Agriculture Organization FAO. Fishery and Aquaculture Country Profiles: Sierra Leone. Rome: FAO, 2020.
6. Food and Agriculture Organization FAO. Fishery and Aquaculture Country Profiles: Nigeria. Rome: FAO, 2020.
7. Food and Agriculture Organization FAO. The State of World Fisheries and Aquaculture 2022: Towards Blue Transformation. Rome: FAO, 2022. https://doi.org/10.4060/cc0461en
8. Food and Agriculture Organization FAO. FAOSTAT Fisheries and Aquaculture Production Statistics. Rome: FAO, 2023.
9. World Bank. Implementation Completion and Results Report: West Africa Regional Fisheries Program – Sierra Leone. Washington DC: World Bank, 2018.
10. World Bank. Sierra Leone Economic Update: Building the Blue Economy. Washington DC: World Bank, 2023.
11. WorldFish. Aquaculture in Sierra Leone: Opportunities and Constraints for Development. Penang: WorldFish Center, 2017.
12. WorldFish. Aquaculture Trends and Prospects in Nigeria. Penang: WorldFish Center, 2020.
13. WorldFish. Fish Production, Consumption and Trade in Sub-Saharan Africa. Penang: WorldFish Center, 2021.
14. Federal Department of Fisheries FDF. Fisheries Statistics of Nigeria. Abuja: Federal Department of Fisheries, 2017.
15. Federal Ministry of Agriculture and Rural Development FMARD. Agricultural Transformation Agenda: Fisheries and Aquaculture Strategy. Abuja: Government of Nigeria, 2014.
16. Government of Sierra Leone. Annual Fisheries Sector Report. Freetown: Ministry of Fisheries and Marine Resources, 2018.