INTEGRATING ESIA INTO COASTAL HIGHWAY INFRASTRUCTURE IN AGRICULTURE, FORESTRY, AND FISHERIES (AFF) ECOSYSTEMS IN NIGERIA

IJEOMA VINCENT-AKPU[1*], CHIZOBA CHINWEZE[2], PETER ONYAGBODOR[1]
[1]Department of Animal and Environmental Biology, Faculty of Science, University of Port Harcourt, Rivers State, Nigeria; [2]Chemtek Associates 4 Falolu Road Surulere, Lagos, Nigeria
***Corresponding Author Email: Ijeoma.vincent-akpu@uniport.edu.ng**

ABSTRACT

Though Agriculture, Forestry and Fisheries (AFF) practices and systems are central to human survival and economic growth, they leave behind, or are affected by massive negative impacts as a result of poor planning and weak regulation. The dual-edged nature of Agriculture, Forestry, and Fisheries (AFF) practices necessitates a balance between development and sustainability. Coastal highway infrastructure development, in particular, poses significant environmental and social risks to AFF communities and ecosystems. This paper examines the impacts of coastal highway projects on Agriculture, Forestry and Fisheries (AFF) communities and ecosystems; using Lagos-Calabar coastal highway project in Nigeria as an example to highlight the need for effective Environmental and Social Impact Assessments (ESIAs) to mitigate these impacts. By integrating ESIA into coastal highway development, we can promote sustainable development, preserve biodiversity hotspots, and ensure the well-being of coastal communities. This paper seeks to stimulate discussion on achieving multiple benefits for human well-being, environmental conservation, and economic growth by balancing development and sustainability

Introduction

Agriculture, Forestry and Fisheries (AFF) practices are crucial to human survival and economic growth. Yet, poor planning and weak regulation of developments often lead to biodiversity loss, pollution, and social displacement. Deforestation, overfishing, soil degradation, and pollution have been linked to AFF practices when poorly managed. Coastal highway infrastructure development exemplifies this tension, as it promises economic connectivity but simultaneously threatens fragile ecosystems and communities dependent on AFF resources. The dual-edged nature of Agriculture, Forestry and Fisheries (AFF) practices necessitates a balance between development and sustainability.

National Bureau of Statistics estimated 229 million people in Nigeria with a rapid growth rate projected to reach 400 million by 2050. However, the increase in population has outpaced infrastructure development, leading to challenges in housing, transportation, and public services. Nigeria has 193,200 kilometers of road, out of which 34,123 km are federal roads, 30,500 km are state roads, and 129,577 km are local government roads (NGFRE, 2023). Improvement in road infrastructure is vital to public welfare and it is expected to play a pivotal role in the economic development of Nigeria by facilitating trade, improving transportation, and fostering significant economic benefits.

Construction of the 700 km Lagos-Calabar coastal highway project started in April 2023. This coastal highway included in the National Integrated Infrastructure Masterplan, is aimed at enhancing Nigeria's infrastructure (NGFRE, 2023). It is planned to be a dual carriageway with initially a ten lanes but has been reduced to five lanes on each side, and a train track in the middle. The road is running parallel to the coastlines and traversing ecologically sensitive zones (Fig 1). This coastal highway transverses nine coastal states of southern Nigeria (Niger delta states: Lagos, Ogun, Ondo, Edo, Delta, Bayelsa, Rivers, Akwa-Ibom and Cross River).

Fig 1: Map of proposed Lagos – Calabar Coastal Highway route through the Coastal States

Coastal highway infrastructure development promises economic connectivity but simultaneously threatens fragile ecosystems for AFF communities. Lagos-Calabar coastal highway project involves land reclamation, drainage systems and bridge construction over rivers and estuaries. directly destroy parts of some beaches, forest reserves and wetlands; huge fragmentation of forest and displacement of agriculture and fishing communities (Premium Times, 2024). Major world's cities and a large portion of economic activities such as industry, shipping and tourism, coastal fisheries, aquaculture, forestry and agriculture occur in coastal regions. It is an area for transfer of matter, energy and living organisms between land and sea with high biological productivity and habitat for estimated 90 percent of the world's fish production.

Despite the socioeconomic benefits of this infrastructure, there are ecological risks, particularly in Niger Delta where we have rich and fragile biodiversity. Coastal ecosystems are among the most diverse and productive natural habitats on Earth. The Niger Delta serve as home to countless plant and animal species, many of which are endemic or endangered (Ogbeibu and Oribhabo, 2023). It directly affects Olague and Uremure Yokri Forest Reserves (Delta State); Apoi and Edumanon National Parks (Bayelsa State): Eba Island Forest Reserve (Ogun and Ondo State) and Stubbs Creek Forest Reserve, a legally gazetted forest reserve in Akwa Ibom State (Fig 2). After route reviews and engineering adjustments, the extent and scale of destruction were reduced. The new route avoided some critical habitats, and demolition reduced from the earlier estimate of 1,500 to 700 buildings (FMINO 2026).

Fig 2: Map of proposed Lagos – Calabar Coastal Highway with route passing protected areas.

Construction of Lagos-Calabar Coastal Highway Project and Assessment Process

The construction and EIA process were carried out in sections (FMINO 2026). Section one: the 47km from Lagos axis is 98 per cent complete. The 30km of this section is open to traffic, with the final 17km undergoing final touches, including minor landscaping and drainage. For section two, construction is underway and scheduled for completion by November 2026, reaching the Ogun/Lagos border. This section includes flyovers, underpasses, and interchanges, with work progressing towards Ogun and Ondo states. Construction on the other sections in Cross River and Akwa Ibom has commenced. The government body responsible for overall project management and development is the Federal Ministry of Works (FMWH) with Hitech Construction Africa Ltd as the EPC+F Contractor responsible for the project execution, while Natural Eco Capital Limited prepares the ESIA and Resettlement Action Plan (FMWH 2023).

Environment and Social Impact Assessment (ESIA) process for the coastal highway started in December 2023 with preliminary ESIA approval granted in May 2024. The ESIA process is carried out in sections with a total of nine sections. The ESIA process has not been completed in some states even after the full approval and public announcements regarding the highway alignment. Approving or initiating an infrastructure of this magnitude before completing a comprehensive ESIA undermines the ESIA Act and raises serious misinformation and controversy about transparency and due process.

ESIAs ensure that first-hand information about the potential environmental impacts, human and economic implications of the project gets to the decision-makers and the public as early as possible, aiming to avoid, reduce, or mitigate the negative effects. Integrating a comprehensive ESIA into the Lagos-Calabar Coastal Highway is essential to prevent irreversible ecological damage to the Niger Delta,

The construction of roads is one of the most widespread forms of ecosystem destruction and fragmentation, leading to threats to biodiversity. A highway project will definitely directly or indirectly subject the coastal ecosystems to habitat fragmentation, exposing organisms to the edge effect and roadkill, exotic species invasion, pollution, over-hunting and genetic barriers, thereby reducing species diversity (Süleyman et al., 2019). The construction activities will lead to large-scale deforestation, disruption of hydrological systems, human displacement, social fragility and long-term economic loss (Hapke et al., 2013). It will weaken the coastal ecosystems, reducing its natural buffers against storms and flooding.

Perception Gaps and Controversy among the Key Stakeholders

Controversy is subject to Misinformation or Disinformation. This infrastructure has led to misinformation among the key stakeholders: government, AFF communities, developers and environmental activist. Key perception gaps and controversies around the Lagos–Calabar Coastal Highway ESIA include mistrust between government and local communities, disputes over route alignment, concerns about shoreline erosion and displacement, and skepticism about transparency in procurement and environmental safeguards (Table 1).

The perception of the communities is that there is low prioritization of biodiversity conservation and human wellbeing by the government and developer (Premium Times 2024). The government prioritize short term economic gains over long term sustainability. While the developers have downplayed some ecological risks to accelerate project approvals. The Ecological tradeoffs are exacerbated, leading to irreversible damage.

There is controversy on how EIA is treated as procedural steps to satisfy regulatory requirements and obtain permits, pointing to the commencement of the project before the full EIA approval. The EIA process was carried out in 9 sections for the different segments of the road. When EIA is properly

done, it identifies ecological tradeoffs before construction and ensures stakeholder participation. It pointed out that the award of contract lack transparency because the contract did not go through competitive bidding which failed short of due process and adherence to public procurement regulations (Businessday, 2024).

Other areas of controversy are centered on the inflated cost of construction, inadequate resettlement and compensation and lack of empathy on the destruction of recreational infrastructures and livelihood at the coastline (Environews Nigeria 2025). The Communities lack access to accurate information on the route for the road, weakening their ability to advocate for rights

Table 1. Perception gaps and controversy among the key stakeholders of the Lagos-Calabar Coastal Highway project

Stakeholder Group	Government Position	Community/NGO Perception	Key Controversies
Government/Ministry of Works and Housing	Project is lawful, ESIA requirements met, procurement approved, compensation ongoing.	ESIA was incomplete before construction, shoreline erosion risks ignored, compensation inadequate.	Timing of ESIA vs. construction, transparency of procurement, route alignment justification.
Local Communities (Fishing villages, farmers, forest-dependent)	Highway will bring development, jobs, and market access.	Fear of displacement, loss of farmland, reduced access to fishing grounds, cultural heritage erosion.	Livelihood disruption, inadequate consultation, mistrust of government promises.
Environmental NGOs/Civil Society	Government claims mitigation measures are in place.	ESIA is fragmented (section-by-section), lacks cumulative impact assessment, weak climate safeguards.	Risk of ecosystem collapse, mangrove destruction, biodiversity loss.
Investors/ Private Sector	Highway will boost trade, tourism, and regional connectivity.	Concerns about legal disputes, reputational risks, and stalled investments	Uncertainty over project legality, cost transparency, and long-term viability.
Academics/ Experts	Government emphasizes technical necessity of route changes.	Experts argue diversion reasons are unclear, demand independent review of ESIA findings.	Lack of independent oversight, weak scientific justification for alignment.
Judiciary / Legal Stakeholders	Government insists approvals are valid under restrictive procurement rules.	Multiple lawsuits filed challenging legality of ESIA and procurement process.	Legal compliance, executive overreach, accountability gaps.

Lagos-Calabar Coastal Highway ESIA Findings and Implementation

Lagos-Calabar coastal highway development highlights the urgent need for balanced strategies that integrate environmental and social safeguards. Effective ESIAs, coupled with transparent governance and community engagement, can mitigate negative impacts while promoting sustainable development. Nigeria's Environmental Impact Assessment Act (1992) mandates ESIA for large-scale projects like the coastal highway. Integrating ESIA into the Lagos-Calabar Highway aligns with the several Sustainable Development Goals (SDGs), and supports Nigeria's Nationally Determined Contributions (NDCs) under the UNFCCC.

During construction, there is controlled earthworks and site preparation, rigid pavement with cement over flexible pavement (asphalt) has been chosen to ensure a durable, sustainable, and high-quality road infrastructure. Included in the ESIA are effective waste management systems and putting traffic and safety controls with continuous environmental monitoring

The ESIA identifies that natural features such as swamps, mangroves, and wetlands requiring special foundation engineering that will minimization habitat destruction and avoid sensitive ecological zones where possible.

The ESIA identifies that altering the coastal landscape will increase vulnerability to erosion and flooding, requiring erosion control structures; flood resilient road elevation and shoreline protection measures. Route alignment mitigations were considered to reduce community displacement, avoid areas vulnerable to ocean surges; avoid existing infrastructures/utilities; protect local settlements and communities from ocean surges and reduce long term coastal erosion impacts

Specific Environmental Considerations for AFF Communities

Agriculture: - Agriculture faces significant environmental challenges when highway construction intersects with farmland and rural landscapes. The ESIA highlights risks such as farmland fragmentation, soil erosion, runoff, sedimentation, and water contamination, all of which can undermine agricultural productivity and food security. To address these concerns, soil and water management strategies are essential, including the establishment of buffer zones, soil stabilization measures, and well-designed drainage systems that protect both farmland and surrounding ecosystems.

Route optimization is another critical consideration, ensuring that highway alignments avoid prime agricultural zones and biodiversity hotspots, with redesigns implemented where necessary to minimize disruption. At the community level, resilience must be strengthened, farmers may benefit from improved access to markets and reduced transportation costs. The ESIA ensures that compensation schemes, livelihood restoration, and support programs are in place for those negatively affected. Additional considerations include promoting climate-smart farming practices to offset potential losses, and integrating monitoring systems to track long-term impacts on soil health and water quality. By embedding these measures, highway development can proceed in a way that balances infrastructure growth with agricultural sustainability and rural community well-being.

Forestry: - Deforestation and biodiversity losses are major concerns in forestry in Nigeria and it requires careful environmental consideration to ensure sustainable resource use and long-term ecological balance. The ESIA plays a central role by identifying critical habitats and forest reserves, supporting reforestation and afforestation programs, and ensuring compliance with Nigeria's climate commitments under the Paris Agreement. Beyond these measures, forestry policies should incentivize agroforestry and climate-smart agriculture to balance productivity with conservation, in addition to promoting soil fertility and biodiversity. The protection of watersheds to safeguard water quality, the prevention of illegal logging and encroachment into forest reserves, and the integration of community-based forest management are needed to strengthen local stewardship.

Fisheries: - Fisheries are particularly vulnerable to the environmental impacts of highway construction and related development activities, requiring targeted safeguards to protect both ecosystems and livelihoods. The ESIA identifies risks such as displacement, disruption of mangroves, destruction of breeding grounds, and reduced access to coastal waters, all of which threaten fish populations and the sustainability of local fishing communities. To mitigate these impacts, pollution control measures are enforced, relocation support is provided where necessary, and alternative livelihood programs are established to ensure fisher folk are not left economically disadvantaged. Additional strategies include

mangrove restoration projects, reforestation initiatives along coastal zones (Odada, 2024) and the promotion of sustainable aquaculture to reduce pressure on wild stocks. Improved coastal zoning is critical to protect sensitive ecosystems, while community training programs on climate-resilient fishing practices help strengthen adaptive capacity. Furthermore, the creation of marine protected areas safeguards biodiversity and ensures the long-term sustainability of fisheries.

Specific Social Considerations for AFF

Social considerations for agriculture, forestry, and fisheries within the ESIA framework emphasize the protection of communities whose livelihoods and cultural identities are closely tied to natural resources. Many coastal communities that rely on fishing, small-scale farming and forest resources may face displacement, livelihood disruption, and cultural heritage concerns when development projects affect natural resources. To address these issues, participatory consultations with farmers, fisher folk, and forest-dependent communities are essential to ensure that their voices shape project design and mitigation measures. Fair compensation, resettlement packages, and livelihood restoration programs must be guaranteed, while inclusive stakeholder engagement promotes equity for marginalized groups such as women, youth, and indigenous populations. The Nigeria's ESIA Act should align with World Bank and IFC resettlement standards which will strengthen accountability and transparency. Cultural heritage assessments are essential to prevent identity loss, and support for alternative livelihoods like aquaculture and agro-processing can strengthen resilience. Effective grievance redress mechanisms and independent ESIA monitoring units should be established, alongside additional mitigations such as capacity-building programs for affected communities, transparent information-sharing platforms, climate adaptation initiatives, gender-sensitive policies, and long-term monitoring of social and environmental impacts to ensure sustainable development outcomes.

Improvement to the ESIA Process

Improvements to the ESIA process for the Lagos–Calabar coastal highway should focus on strengthening its scope, transparency, and accountability. First, there is a clear need for Cumulative Impact Assessments rather than section by section reviews (e.g., Section 1: 0–47.5 km, Section 2: 47.5–104 km), so that the ESIA can evaluate the combined, long-term effects of the highway alongside other existing and planned projects. The Nigeria's current EIA Act does not mandate Strategic Environmental Assessment (SEA), but since SEA guidelines have already been published by the Federal Ministry of Environment and included in the draft ESIA bill, integrating SEA into the large scale projects would provide a broader, policy-level lens to guide sustainable infrastructure planning.

Another improvement is in having a transparent stakeholder engagement, moving beyond procedural compliance to a free, prior, and informed consultation with local communities, particularly indigenous fishing villages and forest-dependent populations, ensuring their voices shape project alignment and mitigation strategies. Establishing an Independent Monitoring Mechanism is equally critical; convening a neutral body like the academics, civil society, international experts to scrutinize ESIA findings, mitigation claims, and monitoring reports would enhance credibility and accountability.

Finally, it is good to ensure that the ESIA processes are fully harmonized with international best practices such as IFC Performance Standards, AfDB safeguards, Equator Principles focusing on the resettlement standards, biodiversity offsets, and grievance redress mechanisms.

Conclusion

The Lagos–Calabar Coastal Highway illustrates the challenge of balancing infrastructure growth with the protection of coastal Agriculture, Forestry, and Fisheries systems. The ESIA findings show that the project poses significant risks to these systems. These risks can be reduced where ESIA is

effectively applied through route optimization, biodiversity protection, erosion and flood controls, stakeholder engagement, livelihood restoration, and continuous monitoring.

Fragmented implementation, weak transparency, limited consultation, and absence of cumulative impact assessment /SEA continue to undermine the process. Achieving sustainable outcomes will require comprehensive cumulative assessments, independent monitoring, adherence to best practices/safeguards, and genuine community participation to balance economic connectivity with ecological resilience.

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