

CONTEXTUALIZING BIODIVERSITY CONSERVATION: A ROADMAP TO POVERTY ALLEVIATION IN NIGERIA

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Abstract

Biodiversity encompasses more than a mere assortment of plant and animal species; it serves as the dynamic underpinning of ecosystems and a cornerstone for human survival and well-being. In the context of Nigeria, a nation grappling with widespread poverty and socio-economic disparities biodiversity conservation emerges as a strategic yet underutilized pathway for addressing pressing development challenges. This paper delves into the complex relationship between biodiversity conservation and poverty alleviation, arguing that the sustainable management of natural resources offers a dual benefit of environmental protection and socio-economic upliftment. It evaluates practical approaches, including sustainable resource utilization, and community-driven initiatives that empower local populations. By emphasizing the connection between ecological stewardship and human development, this discussion highlights how conservation efforts can catalyse job creation, enhance food security, and mitigate climate-related vulnerabilities in Nigeria, ultimately laying the groundwork for more resilient and equitable livelihoods.

1.0 Introduction

Nigeria is recognized as one of Africa's most biodiverse countries, hosting a vast array of ecosystems ranging from rainforests and savannahs to wetlands and mangroves. However, this ecological wealth is under severe threat due to deforestation, habitat degradation, unsustainable agricultural practices, and climate change.¹ Simultaneously, Nigeria faces a stark socio-economic reality, with millions of its citizens living in poverty and struggling to secure fundamental needs such as food, clean water, and energy.² While these challenges may initially appear distinct, they are intrinsically linked: the degradation of ecosystems directly undermines livelihoods dependent on natural resources, exacerbating poverty and leaving communities more vulnerable to environmental shocks.³ Evidence from fossils and paleo-biological investigations indicates that climatic change is a catalyst for mass extinction and significantly affects biodiversity, species composition, plant growth, and productivity.⁴

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¹ Convention on Biological Diversity, *Global Biodiversity Outlook 5* (CBD Secretariat, 2020).

² Bureau of Statistics, *Poverty and Inequality in Nigeria: 2022 Report* (NBS, 2022).

³ Millennium Ecosystem Assessment, *Ecosystems and Human Well-being: Synthesis* (Washington DC Island Press, 2005).

⁴J. K. Okere, and Others, 'Waste-to-Energy: A Circular Economy Tool towards Climate Change Mitigation in Imo State, South-Eastern, Nigeria.' [2019] 7(1) *Asian Journal of Advanced Research and Reports*. 1-17.

This paper examines the critical nexus between biodiversity conservation and poverty alleviation in Nigeria, arguing that protecting biodiversity offers a powerful yet underutilized strategy for sustainable development.⁵ It explores how biodiversity underpins ecosystem services essential to human survival, including food production, water purification, and climate regulation.⁶ Degraded ecosystems compromise these services, forcing communities to rely on unsustainable practices that perpetuate environmental decline and deepen poverty.⁷ Conversely, well-managed ecosystems can serve as a foundation for economic resilience, fostering opportunities for sustainable livelihoods, ecotourism, and agroecological farming practices.⁸

Focusing on Nigeria's unique socio-economic and ecological challenges, this article proposes a roadmap for integrated biodiversity conservation and poverty reduction.⁹ Central to this roadmap are evidence-based policy reforms, capacity-building initiatives for local communities, and partnerships between stakeholders, including government agencies, non-governmental organizations, and the private sector.¹⁰ By leveraging Nigeria's natural capital, the proposed strategies aim to create a future where both human and ecological systems can thrive in harmony.¹¹

2.0 Understanding Biodiversity in Nigeria

Nigeria's natural landscapes are as diverse as its rich culture, encompassing a variety of ecosystems that support countless plant and animal species, many of which are endemic to the region. From the dense rainforests of the south to the arid savannas in the north, Nigeria's biodiversity plays a critical role in maintaining ecological balance, providing ecosystem services, and sustaining livelihoods.¹² Among the most prominent biodiversity hotspots in Nigeria are the Niger Delta Wetlands and the Cross River Rainforest.¹³

The Niger Delta Wetlands are one of the most ecologically significant areas in Africa, serving as a critical habitat for aquatic life, including fish species vital to local and commercial fisheries.¹⁴ They are indispensable for carbon sequestration and act as natural buffers against flooding. Despite their importance, the Niger Delta Wetlands face growing threats from oil exploration, agricultural expansion, and industrial pollution, which have led to habitat degradation and significant biodiversity loss.¹⁵

⁵ Nigerian Conservation Foundation, *Conserving Nigeria's Biodiversity: A Call to Action* (NCF 2019).

⁶ IPBES, *Global Assessment Report on Biodiversity and Ecosystem Services* (IPBES Secretariat 2019).

⁷ UNEP, *The Role of Nature-Based Solutions in Addressing Socio-Economic Challenges* (UNEP 2021).

⁸ World Resources Institute, *Restoring Ecosystems in Africa for Climate and Poverty Solutions* (WRI 2021).

⁹ Food and Agriculture Organization, *State of the World's Forests 2022* (FAO 2022).

¹⁰ Federal Ministry of Environment (Nigeria), *National Biodiversity Strategy and Action Plan (NBSAP)* (2016).

¹¹ M A Oyinloye and E A Adu, 'Conservation and Poverty Reduction in Nigeria: Policy Perspectives' (2023) 11(4) *Nigerian Journal of Environmental Policy* 56–72.

¹² Convention on Biological Diversity (n1).

¹³ S C Izah and A O Aigberua, 'Potential Threats and Possible Conservation Strategies of Biodiversity in Niger Delta Region of Nigeria' in *Sustainable Utilization and Conservation of Africa's Biological Resources and Environment* (Springer Nature Singapore, 2023) 151–76.

¹⁴ Food and Agriculture Organization, *State of the World's Forests 2022* (FAO, 2022).

¹⁵ World Bank, *Nigeria: Advancing Social and Environmental Sustainability* (World Bank, 2020).

The Cross River Rainforest is one of Nigeria's few remaining intact rainforests and is internationally recognized for its biodiversity. It provides habitat for the critically endangered Cross River gorilla (*Gorilla gorilla diehli*), forest elephants, and other rare species.¹⁶ The rainforest also supports local economies through activities such as non-timber forest product harvesting and ecotourism. However, it is increasingly under threat from illegal logging, agricultural encroachment, and infrastructure development.¹⁷ It must be mentioned that these harmful environmental practices are in contravention of various Nigerian Laws such as the NESREA Act¹⁸

Despite Nigeria's immense biodiversity, it is under severe pressure. Forests are being cleared at alarming rates for agriculture, infrastructure expansion, and urbanization, while illegal hunting has led to significant declines in wildlife populations.¹⁹ Climate change further exacerbates these challenges, altering ecosystems and increasing the vulnerability of both human and natural systems.²⁰

Conservation initiatives such as the National Biodiversity Strategy and Action Plan (NBSAP) are in place to address these challenges.²¹ However, their effectiveness is limited by inadequate funding, insufficient enforcement of environmental regulations, and weak political will.²² Furthermore, community involvement in conservation efforts remains inconsistent, highlighting the need for inclusive approaches that align conservation goals with local socio-economic interests.²³

To address these issues, integrated conservation strategies must prioritize sustainable resource management, capacity building for local stakeholders, and stronger enforcement of environmental policies.²⁴ Collaborative efforts involving government agencies, international organizations, and local communities are critical for reversing biodiversity loss and ensuring ecological and economic sustainability.

3.0 How Biodiversity Supports Livelihoods

For many Nigerians, especially those in rural areas, biodiversity is not merely an aesthetic asset but a crucial lifeline. The rich ecosystems of Nigeria, including its forests, rivers, wetlands, and grasslands, provide essential resources for millions of people. Forests are vital sources of food, medicinal plants, and materials for housing, crafting, and local industries. These ecosystems also support agriculture by providing pollinators, soil fertility, and pest control. Rivers and wetlands are particularly significant,

¹⁶ WWF, *Living Planet Report 2021: Bending the Curve of Biodiversity Loss* (WWF 2021).

¹⁷ Nigerian Conservation Foundation, *Conserving Nigeria's Biodiversity: A Call to Action* (NCF 2019).

¹⁸ Section 7(1) and 20 of the National Environmental Standards and Regulations Enforcement Agency (NESREA) Act (2007); See also Section 2 and 5 of the Timber Licensing Regulations (1963).

¹⁹ Millennium Ecosystem Assessment (n3).

²⁰ IPBES (n6).

²¹ Federal Ministry of Environment (Nigeria), *National Biodiversity Strategy and Action Plan (NBSAP)* (2016).

²² UNEP, *The Role of Nature-Based Solutions in Addressing Socio-Economic Challenges* (UNEP, 2021).

²³ Nigeria Environmental Study Action Team, *Climate Change and Nigeria's Ecosystems* (NEST, 2017).

²⁴ S Lele and J Pretty, 'Sustainability and Resilience: Linking Poverty Alleviation and Conservation' (2018) 8(3) *Environmental Sustainability* 27–34.

offering fish which is a primary source of protein, along with water for irrigation and domestic use.²⁵ In many rural communities, these biodiversity resources directly contribute to both subsistence and market economies, serving as sources of income and sustenance.

However, when these resources are overexploited or destroyed through activities such as deforestation, overfishing, and industrial pollution, the communities that depend on them face devastating consequences. The loss of biodiversity erodes the resilience of local economies and threatens food security. For example, overfishing in Nigeria's coastal waters has led to declining fish stocks, while unsustainable agricultural practices are causing soil degradation and reduced crop yields.²⁶ In such contexts, the depletion of natural resources directly undermines the livelihoods of rural populations, leaving them with few options for survival.²⁷ This phenomenon illustrates the close link between biodiversity health and the economic well-being of communities.

4.0 Poverty in Nigeria: A Persistent Challenge

Despite its status as Africa's largest economy, Nigeria struggles with one of the highest poverty rates globally. According to the World Bank, over 40% of the population lives below the poverty line, with rural areas suffering the most.²⁸ These poverty levels are driven by various factors, including high unemployment, inadequate infrastructure, and insufficient access to quality education and healthcare. Yet, environmental degradation remains one of the lesser-discussed but crucial drivers of poverty. As natural resources are depleted whether through deforestation, desertification, or the pollution of rivers, communities lose vital sources of income and sustenance, exacerbating their socio-economic challenges.²⁹

The relationship between poverty and environmental degradation is complex and mutually reinforcing. For many poor communities, the destruction of ecosystems often forces them to exploit remaining resources more intensively, exacerbating environmental damage. In the absence of alternative livelihoods, this overexploitation becomes a coping mechanism. However, as the environment continues to degrade, the resources that these communities depend on dwindle, worsening their economic circumstances. This creates a vicious cycle where poverty and environmental decline feed into each other, creating barriers to development and perpetuating socio-economic hardship.³⁰ As a result, addressing both poverty and environmental degradation requires an integrated approach that recognizes their interconnectedness.

Environmental restoration and sustainable resource management have the potential to break this cycle. By preserving biodiversity and ensuring that ecosystems remain healthy, communities can sustain

²⁵ World Bank (n15); Cecile Brugere, David Lymer and Devin Bartley, 'Ecosystem Services in Freshwater Fish Production Systems and Aquatic Ecosystems: Recognizing, Demonstrating and Capturing Their Value in Food Production and Water Management Decisions' (2016) < <http://www.teebweb.org/agriculture-and-food/inland-fisheries/> > accessed 27/11/24.

²⁶ Nigerian Conservation Foundation (n17); O D Elisha and M J Felix, 'Destruction of Coastal Ecosystems and the Vicious Cycle of Poverty in Niger Delta Region' (2021) 11(2) *Journal of Global Agriculture and Ecology* 7–24.

²⁷ Millennium Ecosystem Assessment. (n3)

²⁸ Nigeria Bureau of Statistics, *Poverty and Inequality in Nigeria: 2022 Report* (NBS 2022)..

²⁹ UNEP, *The Role of Nature-Based Solutions in Addressing Socio-Economic Challenges* (UNEP 2021).

³⁰ S Lele and J Pretty, 'Sustainability and Resilience: Linking Poverty Alleviation and Conservation' (2018) 8(3) *Environmental Sustainability* 27–34.

livelihoods while also contributing to broader national goals of poverty alleviation and economic development. However, achieving this requires coordinated efforts from government, civil society, and local communities, as well as adequate funding and political commitment.³¹

5.0 How Biodiversity Conservation Can Reduce Poverty

Conserving biodiversity is increasingly recognized as a critical strategy for breaking the vicious cycle of poverty and environmental degradation. Ecosystems provide a vast array of essential services that sustain human life and well-being, including clean water, fertile soil, and raw materials for housing, energy, and crafts. These ecosystem services are particularly important in rural areas, where they support livelihoods and contribute to economic resilience. When ecosystems are protected and sustainably managed, they offer long-term benefits that can reduce poverty, promote sustainable development, and enhance food and water security.³²

Biodiversity conservation can contribute to poverty alleviation by enhancing the resilience of ecosystems and the communities that depend on them. For instance, intact forests regulate water cycles, prevent soil erosion, and support agricultural productivity by fostering biodiversity that is crucial for pollination, pest control, and soil health. Conversely, deforestation and land degradation often lead to a decline in these services, which exacerbates poverty and vulnerability to environmental shocks. Thus, protecting biodiversity can mitigate the effects of environmental degradation and provide people with the resources they need to improve their lives sustainably.

Several global case studies have demonstrated the success of biodiversity conservation in reducing poverty. For example, in Costa Rica, the government implemented a Payment for Ecosystem Services (PES) program, where farmers and landowners are financially compensated for protecting forests and maintaining ecosystem services such as carbon sequestration, water purification, and biodiversity conservation.³³ This initiative has reduced deforestation rates, enhanced forest cover, and provided a steady income to rural farmers, significantly lifting many communities out of poverty.³⁴ In India, community-based forest management programs have empowered local people to manage and conserve their forests while also creating jobs through sustainable practices such as eco-tourism, forest-based enterprises, and non-timber forest product harvesting. These programs have not only improved conservation outcomes but also provided economic opportunities for marginalized communities.³⁵ Nigeria, with its immense biodiversity and vast natural resources, has the potential to replicate such successes by adopting similar strategies tailored to its unique ecological and socio-economic context.

³¹Nigeria Environmental Study Action Team (NEST), *Climate Change and Nigeria's Ecosystems* (NEST 2017).

³²World Bank, *Nigeria: Advancing Social and Environmental Sustainability* (World Bank 2020).

³³ K Brownson and others, 'Governance of Payments for Ecosystem Services Influences Social and Environmental Outcomes in Costa Rica' (2020) 174 *Ecological Economics* 106659.

³⁴S Pagiola and G Platias, 'Payments for Ecosystem Services in Costa Rica' (2021) 23(1) *Environmental Economics and Policy Studies* 45–68.

³⁵A Agrawal and E Ostrom, 'Collective Action, Property Rights, and Decentralization in Resource Use in India' (2001) 63(2) *Journal of Development Economics* 111–33.

5.1. Ecotourism

Nigeria has several ecotourism destinations, such as the Yankari Game Reserve, which is home to diverse wildlife including elephants, lions, and various species of birds.³⁶ Ecotourism, if properly developed, could attract both international and local tourists, creating employment opportunities in the hospitality, transport, and guiding sectors. Jobs created through ecotourism could improve the livelihoods of local communities, while generating revenue that could be reinvested in conservation efforts. Moreover, the development of ecotourism could promote the preservation of unique ecosystems, thereby protecting endangered species and critical habitats. Research shows that ecotourism, when well-managed, can be an effective tool for both biodiversity conservation and poverty alleviation by promoting sustainable economic development in rural areas.³⁷

5.2. Sustainable Agriculture

Another promising avenue for reducing poverty through biodiversity conservation in Nigeria is the promotion of sustainable agriculture. Techniques such as agroforestry, which is the integration of trees and crops, can significantly improve agricultural yields while preserving the integrity of forest ecosystems.³⁸ Agroforestry systems enhance soil fertility, increase water retention, reduce erosion, and foster biodiversity, making them more resilient to climate change impacts. They also provide farmers with additional income streams from timber, fruits, and other tree products, thereby diversifying and securing their livelihoods. Sustainable agricultural practices have been shown to increase food security and reduce poverty by enhancing agricultural productivity and resilience.³⁹

5.3. Non-Timber Forest Products

The collection and sale of non-timber forest products (NTFPs) offer additional avenues for income generation that do not involve the destruction of forests. Products such as honey, mushrooms, medicinal plants, and wild fruits can be sustainably harvested and marketed. These products not only support local economies but also contribute to the conservation of biodiversity by providing incentives for maintaining forests rather than clearing them for agriculture. By promoting the sustainable harvesting and trade of NTFPs, communities can create alternative livelihoods that reduce dependence on destructive practices like logging and slash-and-burn agriculture. Research has shown that the commercialization of NTFPs can significantly contribute to poverty reduction by providing income, employment, and food security, especially in rural areas.⁴⁰

³⁶ Y A Magama and others, 'Assessment of Wildlife Species Mostly Involved in Human-Wildlife Conflict around Yankari Game Reserve, Bauchi State, Nigeria' (2018) 9(9) *International Journal of Contemporary Research and Review* 20262–77.

³⁷ Nigerian Conservation Foundation, *Conserving Nigeria's Biodiversity: A Call to Action* (NCF 2019).

³⁸ N P Awazi and N M Tchamba, 'Enhancing Agricultural Sustainability and Productivity under Changing Climate Conditions through Improved Agroforestry Practices in Smallholder Farming Systems in Sub-Saharan Africa' (2019) 14(7) *African Journal of Agricultural Research* 379–88.

³⁹ M A Altieri and C I Nicholls, 'Agroecology: A Sustainable Solution to Hunger and Poverty' (2020) 29(3) *Journal of Sustainable Agriculture* 8–16.

⁴⁰ T Vedeld and others, 'Forest Environmental Income and Rural Livelihoods: A Global Overview' (2007) 35(3) *World Development* 413–28.

6.0 The Role of Government, Institutions and Communities in Biodiversity Conservation

The effective conservation of biodiversity in Nigeria requires a multifaceted approach that involves both institutional leadership and community engagement. Institutional frameworks, such as government agencies, policymakers, and international organizations, play a pivotal role in creating an enabling environment for biodiversity conservation. At the same time, local communities, whose livelihoods are intrinsically linked to the natural resources surrounding them, are essential actors in implementing conservation strategies. This dual approach strengthening institutions and empowering communities ensures that conservation efforts are both comprehensive and sustainable.

The Nigerian government, through agencies such as the Federal Ministry of Environment, plays a critical role in leading the nation's biodiversity conservation efforts.⁴¹ Section 7(c) allows NESREA to enforce standards, while Section 8(g) enables it to safeguard endangered species in alignment with global agreements like the International Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

A key function of these institutions is to provide the necessary legal and regulatory frameworks that govern conservation activities. The establishment of policies, such as the National Biodiversity Strategy and Action Plan (NBSAP),⁴² is an example of how the government seeks to align national priorities with global biodiversity goals. However, for these policies to be effective, they must be adequately funded, supported by robust enforcement mechanisms, and integrated into broader development plans. Without sufficient financial investment, the ambitious goals set out in these policies are unlikely to be realized. In addition, the creation of incentives for conservation, such as subsidies for sustainable agricultural practices or ecotourism development, can stimulate local participation and ensure the long-term sustainability of conservation efforts.⁴³

Collaboration with international organizations, such as the United Nations Environment Programme (UNEP), the World Bank, and the Convention on Biological Diversity (CBD), is another critical aspect of governmental efforts. These organizations provide technical expertise, financial support, and a global platform for sharing best practices. International partnerships are also vital in addressing cross-border conservation issues, such as migratory species and transnational ecosystem management.⁴⁴ For example, the Niger Basin Authority facilitates the management of shared water resources, promoting cooperation between Nigeria and its neighbors for the protection of aquatic biodiversity.⁴⁵ Through these international alliances, Nigeria can access additional resources and knowledge to strengthen its biodiversity conservation initiatives.⁴⁶

⁴¹ S. 7 and 8 of the National Environmental Standards and Regulations Enforcement Agency (NESREA) Act of 2007.

⁴² <https://www.cbd.int/doc/world/ng/ng-nbsap-v2-en.pdf> accessed 29/11/24.

⁴³ World Bank, *Nigeria: Advancing Social and Environmental Sustainability* (World Bank 2020).

⁴⁴ P E Ndimele and others, 'Fostering International and Trans-Boundary Cooperation in the Management of Lake Chad Fisheries, Wildlife and Flora: The Role of a Trans-Boundary Ramsar Conservation Area' (2024) 37 *Aquatic Living Resources* 6.

⁴⁵ *ibid*

⁴⁶ UNEP, *The Role of Nature-Based Solutions in Addressing Socio-Economic Challenges* (UNEP 2021).

6.1 Empowering Local Communities

While government action is essential, local communities especially in rural and forest-dependent areas are often the most effective stewards of biodiversity. These communities possess deep knowledge of local ecosystems and have a vested interest in preserving the resources that sustain their livelihoods. Empowering these communities through education, funding, and legal rights is crucial to making conservation efforts more effective and inclusive.⁴⁷

Education plays a central role in community-based conservation by increasing awareness about the value of biodiversity and the consequences of environmental degradation. Programs aimed at educating local populations about sustainable land use practices, forest management, and wildlife protection can equip them with the tools necessary to protect and enhance biodiversity. For example, the Community Conservation Education Program implemented by the Nigerian Conservation Foundation (NCF) has led to increased awareness and participation in conservation activities among rural communities.⁴⁸

Additionally, providing funding to local communities for conservation projects can incentivize participation and help bridge the financial gaps that often hinder conservation efforts. This funding can support a variety of activities, including the development of sustainable agriculture, eco-tourism ventures, and the creation of community-run protected areas. Legal rights are another essential component in empowering local communities. In many cases, the lack of secure land tenure or ownership rights hinders communities from investing in long-term conservation efforts. Granting local communities legal recognition of their land rights allows them to manage their resources more sustainably and resist external pressures that may seek to exploit those resources. Studies show that communities with secure land tenure are more likely to engage in successful conservation practices.⁴⁹

6.2 The Role of Women in Biodiversity Conservation

An often overlooked but vital aspect of community-based biodiversity conservation is the involvement of women. In many rural Nigerian communities, women play a central role in managing natural resources, from water collection to crop production, firewood gathering, and the harvest of non-timber forest products, such as honey, fruits, medicinal plants, etc. However, despite their critical contributions to resource management, women are frequently excluded from decision-making processes regarding biodiversity conservation and natural resource governance. This exclusion often leads to conservation strategies that do not fully account for the needs and perspectives of women, reducing their effectiveness and sustainability.

Including women in decision-making processes ensures that conservation efforts are more inclusive and reflect the needs of the entire community. Furthermore, empowering women to participate in conservation activities has been shown to yield positive results. For example, in Kenya, women's involvement in community-based wildlife management programs led to more sustainable and effective conservation outcomes by ensuring that local knowledge and gendered perspectives were incorporated

⁴⁷ A O Hart, 'Institutional Framework for Sustainable Community Engagement for Development in Nigeria' (2024) 10(2) *Journal of Humanities and Social Policy*.

⁴⁸ Nigerian Conservation Foundation, *Conserving Nigeria's Biodiversity: A Call to Action* (NCF 2019).

⁴⁹ K Deininger and DA Ali, 'Do Overlapping Land Rights Reduce Land Disputes? Evidence from Uganda' (2016) World Bank Policy Research Working Paper 7860.

into the management of natural resources.⁵⁰ Similarly, in Nigeria, women's involvement in forest management, agroforestry, and sustainable agricultural practices could significantly contribute to the effectiveness and sustainability of biodiversity conservation programs. Integrating gender equality into biodiversity conservation policies also aligns with global frameworks, such as the United Nations Sustainable Development Goals (SDGs), which emphasize gender equality and the empowerment of women.⁵¹

7.0 A Roadmap for Biodiversity Conservation and Poverty Reduction in Nigeria

Nigeria, with its rich biodiversity and complex socio-economic challenges, has the potential to harness its natural capital to promote sustainable development. To achieve this, a comprehensive roadmap is necessary one that integrates immediate, medium-term, and long-term actions aimed at both conserving biodiversity and alleviating poverty. This roadmap must focus on practical steps that engage institutions, local communities, and the private sector while balancing the needs for environmental protection and economic growth.

7.1 Launch Awareness Campaigns to Demonstrate the Value of Biodiversity

One of the first actions Nigeria must take is to launch widespread awareness campaigns that emphasize the importance of biodiversity and the benefits it provides. Public education is critical in changing perceptions about the value of ecosystems, which are often viewed solely as natural resources to be exploited. Awareness campaigns should target local communities, policymakers, the private sector, and the general public, educating them on the direct benefits that biodiversity provides, such as food security, climate regulation, and economic opportunities through sustainable practices. Successful models for such campaigns include the National Environmental Education Program in India, which raised awareness about conservation issues at the grassroots level and was linked to significant changes in local behavior and resource management.⁵²

Additionally, campaigns should highlight the negative consequences of biodiversity loss, such as soil degradation, loss of food sources, and the vulnerability of rural populations to climate change. These efforts can draw on visual media, social media platforms, and community meetings to reach a wide audience.

7.2 Start Pilot Projects in Areas with High Poverty and Rich Biodiversity

In regions where biodiversity is both abundant and under threat, pilot conservation projects can be initiated to demonstrate the feasibility of sustainable livelihoods that simultaneously protect ecosystems and reduce poverty. For instance, in Cross River Rain Forest, the introduction of community-run ecotourism and sustainable resource management could serve as a pilot project. By involving local communities in the management of the reserve, the project could create jobs in tourism, guide services, and park management, while protecting endangered species such as the Cross River gorilla (*Gorilla gorilla diehli*), forest elephants, and other rare species. These projects should be designed to include

⁵⁰J Kariuki and R Birner, 'Exploring Gender Equity in Ecological Restoration: The Case of a Market-Based Program in Kenya' (2021) 39(1-2) *Ecological Restoration* 77–89.

⁵¹United Nations, *Transforming Our World: The 2030 Agenda for Sustainable Development* (United Nations 2015).

⁵²E Duflo and M Kremer, 'Use of Randomization in the Field' (2007) 6 *Annual Review of Economics* 69–88.

capacity-building initiatives that train local people in sustainable land-use practices, agroforestry, and eco-tourism.

Furthermore, pilot projects could focus on agroecological practices that promote sustainable agriculture while conserving biodiversity. In Engenni, Rivers State where farming is the mainstay, for example, local farmers could be trained in agroforestry and organic farming methods that increase crop yields, preserve soil fertility, and enhance local biodiversity. These initiatives can be supported by providing start-up funding or microloans to local communities, ensuring that they have the necessary resources to implement sustainable practices.⁵³

7.3 Improve Legal and Institutional Support for Conservation

One of the primary challenges facing biodiversity conservation in Nigeria is the lack of effective enforcement of existing environmental laws and policies. Strengthening legal frameworks for biodiversity conservation, such as the National Environmental Standards and Regulations Enforcement Agency (NESREA) and improving the effectiveness of environmental courts could significantly reduce illegal activities like poaching, logging, and land encroachment. Moreover, the establishment of clear property rights and land tenure systems would empower local communities to take a more active role in managing their natural resources. This would incentivize communities to protect forests, wetlands, and other ecosystems on which they depend for their livelihoods.

In Cross River State, Nigeria's last remaining rainforest, it is on paper that the government has worked with local communities and NGOs to establish a system of community-managed protected areas.⁵⁴ This collaborative approach ensures that local populations benefit from conservation through eco-tourism revenues and sustainable harvesting of non-timber forest products, while also contributing to the protection of endangered species like the Cross River gorilla. Strengthening the legal backing of these initiatives could encourage further local participation in conservation efforts.⁵⁵

7.4. Integrating Biodiversity Conservation into Economic Development

The long-term success of biodiversity conservation in Nigeria lies in integrating conservation efforts into the country's broader economic development agenda. The goal is to create an economy where biodiversity conservation drives sustainable growth, benefiting both the environment and the people who depend on it. To do this, sustainable farming, forestry, and fishing should be encouraged, and policies that reward conservation efforts should be pushed. It must be mentioned that Nigeria can reach her development goals and protect biodiversity at the same time by using market-based tools like environmental taxes or pricing systems, payment for ecosystem services (PES), and support for

⁵³S Ayala and L Martins, 'Agroforestry Systems: Benefits for Sustainable Agriculture' (2017) 15(4) *International Journal of Agricultural Sustainability* 443–458.

⁵⁴T Krause and others, 'What Future for Primates? Conservation Struggles in the Forests of Cross River State, Nigeria' (2019) 14 *Sustainability Science* 1515–1529.

⁵⁵Nigerian Conservation Foundation, *Cross River State Forest Management Initiative* (NCF 2019).

sustainable practices.⁵⁶ Creating green jobs and encouraging partnerships between the public and private sectors can also help the economy grow while protecting the environment for the long run.

7.5 Develop Policies that Balance Conservation with Economic Development

For Nigeria to truly transform its approach to development, policies must be created that explicitly balance the need for economic growth with the imperatives of environmental sustainability. The National Biodiversity Strategy and Action Plan (NBSAP) must evolve to include specific, actionable policies that incentivize the sustainable use of biodiversity. These policies could include tax incentives for businesses engaged in sustainable practices, support for green entrepreneurship, and stricter penalties for activities that degrade biodiversity, such as illegal logging and overfishing. In Costa Rica, the government's commitment to balancing environmental protection with economic development has led to the development of a green economy, where eco-tourism, sustainable agriculture, and forest carbon credits play significant roles. This model could be replicated in Nigeria by fostering partnerships between the government, NGOs, and the private sector, creating a market for biodiversity-based goods and services.⁵⁷

7.6 Build an Economy Where Biodiversity Conservation is a Driver of Growth

Biodiversity conservation must be integrated into Nigeria's economic strategies, ensuring that the country's natural wealth is seen as a driver of sustainable growth. This includes establishing a green economy that supports industries like eco-tourism, sustainable agriculture, and renewable energy, which can create jobs while reducing environmental degradation. Nigeria should invest in infrastructure that supports sustainable development, such as renewable energy, organic farming systems, and eco-friendly construction practices. Additionally, the development of biodiversity-based industries, such as the sustainable harvesting and trade of non-timber forest products, will enable rural communities to benefit economically from biodiversity conservation.

By creating financial models that tie economic growth to environmental protection, Nigeria can build a future in which conservation not only supports biodiversity but also enhances national wealth. The Green Economy Initiative in Uganda, which has successfully aligned environmental goals with national development strategies, could serve as a model for Nigeria.⁵⁸

8. Conclusion

The potential for biodiversity conservation to reduce poverty in Nigeria is vast. By adopting integrated conservation strategies that incorporate ecotourism, sustainable agriculture, and the sustainable use of non-timber forest products, Nigeria can tap into its natural capital to promote sustainable development. These strategies, when combined with appropriate policy reforms and community engagement, have the potential to break the cycle of poverty and environmental degradation. As demonstrated in other

⁵⁶ R Pirard, 'Market-Based Instruments for Biodiversity and Ecosystem Services: A Lexicon' (2012) 19 *Environmental Science & Policy* 59–68.

⁵⁷ R Pirard, 'Market-Based Instruments for Biodiversity and Ecosystem Services: A Lexicon' (2012) 19 *Environmental Science & Policy* 59–68.

⁵⁸ S Pagiola, 'Costa Rica's Green Economy and the Role of Payment for Ecosystem Services' (2016) 121 *Ecological Economics* 102–113.

parts of the world, biodiversity conservation can provide both ecological and economic benefits, fostering a more sustainable and equitable future for Nigeria's people and ecosystems.

Nigeria's biodiversity is a hidden treasure that, if managed wisely, can help lift millions out of poverty. By protecting ecosystems and empowering communities, the country can create a future where both people and nature thrive. This endeavour will be challenging; yet, with dedication, cooperation, and a systematic plan, the vision is attainable. Prompt activities, including awareness campaigns and pilot projects, will establish the foundation for medium-term objectives aimed at enhancing legislative frameworks and expanding community-based programs. The ultimate objective is to include biodiversity protection into Nigeria's economic development strategies, fostering a prosperous and sustainable economy that benefits everyone.

It must be reiterated that biodiversity conservation in Nigeria cannot be achieved without the active involvement of both institutions and local communities. Government agencies must provide the necessary legal, financial, and institutional support, while international organizations play an important role in facilitating collaboration and knowledge exchange. At the same time, local communities, especially those in rural areas, must be empowered to take ownership of conservation efforts. This can be accomplished through education, secure land rights, and access to funding for sustainable projects. Finally, women must be recognized as key stakeholders in conservation, as their participation significantly enhances the effectiveness and sustainability of conservation initiatives. By integrating these elements into a cohesive strategy, Nigeria can create a future where both its people and biodiversity thrive.