Lawrence Akpoterai
lawrenceakpoterai@gmail.com

15th November, 2024

African Climate and Environment Center
Future African Savannas

POLICY BRIEF

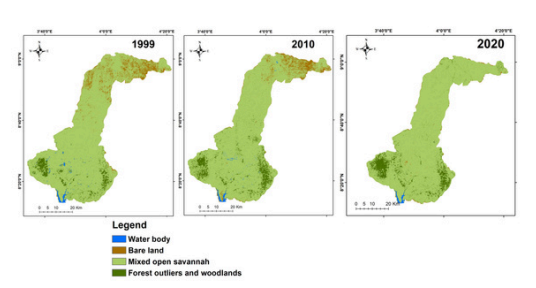
Credit for all images: Author

SAFEGUARDING SAVANNAS: CLIMATE-RESPONSIVE CONSERVATION IN OLD OYO NATIONAL PARK, NIGERIA

Human-induced climate change has led to widespread ecological changes in protected ecosystems, with significant impacts seen in African savannas. Shifts in climate patterns have compounded challenges such as habitat degradation, biodiversity loss and the spread of invasive species. This study therefore explored the relationship between climate variables and vegetation cover changes and investigated the adoption of nature-based solutions to support adaptive management strategies within Old Oyo National Park, Nigeria.

OVERVIEW

Remote sensing techniques were used to examine vegetation cover and climate-vegetation dynamics. Participatory mapping and interviews provided insights into perceived climate impacts and nature-based conservation practices. This research highlights the need for tailored, adaptive strategies to manage climate-driven threats to vegetation in Old Oyo National Park.



POLICY RECOMMENDATIONS

1. Prioritize investment in conservation resources
2. Support protection of native plant species
3. Integrate NbS into land management policies
4. Implement invasive species control programs
5. Promote research and monitoring

1. The government should prioritize funding for conservation resources, infrastructure improvements, training and partnerships.
2. Urgent action and policy support are needed to preserve and restore native plant species to maintain biodiversity and ecological balance.
3. Identified NbS, such as afforestation and fire management should be promoted and embedded in land management policies.
4. Target interventions to manage and control invasive species and protect native vegetation.
5. Increased research support is critical for monitoring of climate change impacts to inform adaptive management strategies.

POLICY BRIEF

KEY FINDINGS

The study revealed that mixed open savanna, consisting of grassland, shrubland and woodland, dominates Old Oyo National Park (OONP). From 1999 to 2020, there was an app. 69.7% **reduction in bare land**, a net **increase in savanna vegetation** (~54 km²) and a significant **expansion in forested areas and woodlands** by app. 59.8%. However, water bodies declined by ~18.6%, indicating potential hydrological stresses.

Climate data showed a notable **increase in temperature** and a slight **variability in rainfall** over the study period. Variability in rainfall and upward temperature trends did not significantly affect vegetation health. However, correlation analyses indicated that vegetation indices positively correlated with rainfall and inversely correlated with temperature, especially in 1990, 2000, 2010 and 2021.

Key Nature-based Solution (NbS) conservation practices implemented within the park, include **fire management, afforestation, avoided grazing** and **conservation education**. These efforts contribute to the stability of the savanna vegetation and the management of overall vegetation cover.

Nonetheless, the **proliferation of the invasive species** *Chromolaena odorata* appears to result in forest encroachment. Hence, it appears that the positive savanna vegetation stability revealed in this study by using remote sensing, may not actually reflect ecological balance.

NOTE

The study relied on satellite-derived climate data and vegetation indexes, with insights on perceived climate change impacts and conservation practices primarily gathered from OONP park officials. Also, navigating parts of the park during the field exercise was constrained due to poor infrastructure. Finally, a major concern with the park is the lack of partnerships and collaborations with research institutions, NGOs or civil society organisations to support conservation efforts.

CONCLUSION

While the identified NbS practices may have contributed to positive vegetation trends within OONP, the encroachment of invasive species such as *Chromolaena odorata* suggests that current stability may not be sustainable. The results underscore the importance of targeted management efforts, including invasive species control, native species restoration, water management, enhanced conservation education, and increased government support. Continued investment in conservation infrastructure and adaptive management will be crucial to enhance ecosystem resilience in OONP and to safeguard the ecological balance of this critical savanna ecosystem. Future research should focus on evaluating the efficacy of existing conservation measures and monitoring climate change impacts on vegetation cover to inform policy and management.

REFERENCES

Afuye, G. A., Kalumba, A. M., & Orimoloye, I. R. (2021). Characterisation of Vegetation Response to Climate Change: A Review. Sustainability, 13(13), 7265.

Boone, R. B., Conant, R. T., Sircely, J., Thornton, P. K., & Herrero, M. (2018). Climate change impacts on selected global rangeland ecosystem services. Global Change Biology, 24(3), 1382–1393.

Olaniyi, O. E., & Omowale, H. O. (2022). Evaluating the dynamics and eco-climatic predictors of forest conversion and restoration in Old Oyo National Park, Nigeria using geospatial and machine learning techniques. Modeling Earth Systems and Environment, 1-18.

GLOBAL SOUTH STUDIES CENTER COLOGNE

UNIVERSITY OF NAIROBI

zef Zentrum für Entwicklungsforschung Universität Bonn

DAAD Global Centres Deutscher Akademischer Austauschdienst German Academic Exchange Service

Federal Foreign Office