

5th World Congress on **Climate Change and Ecosystem**

March 26-27, 2026 | Paris, France

Ecosystem services, biodiversity, and climate resilience: insights from forest-dependent communities in Nigeria**Banki Thomas Chunwate**

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Climate change, biodiversity loss, and ecosystem degradation pose significant threats to sustainable development, particularly in forest-dependent regions of the Global South. While gazetted forest reserves are central to climate mitigation, biodiversity conservation, and ecosystem service provision, conservation strategies often overlook the perspectives of local communities who directly depend on these ecosystems. This study examines community perceptions of ecosystem services provided by three gazetted forest reserves (Doma, Risha, and Odu) in Nasarawa State, North Central Nigeria, and explores their implications for climate resilience, biodiversity management, and sustainability.

Using a mixed-methods approach, data were collected from 252 household surveys, key informant interviews, and focus group discussions across forest-adjacent communities. Quantitative data were analysed using the Statistical Package for the Social Sciences (SPSS, version 29) to generate descriptive statistics and examine associations between demographic characteristics and ecosystem service perceptions. Regulating services such as rainfall regulation, soil fertility, and climate regulation were also widely recognized (>90%), while biodiversity protection was universally acknowledged across all sites. Comparative

results show similar and different benefits perceived from the three forests. Cultural ecosystem services varied spatially. For example, most people indicated that traditional worship is considered very important in Odu forest, whereas it was seen as less important in Doma, and not an important benefit to the Risha forest community. The findings reveal a strong climate–ecosystem services–biodiversity nexus rooted in community experience and highlight the importance of integrating local knowledge into nature-based solutions and ecosystem-based adaptation strategies. Community-inclusive and site-specific forest governance is essential for enhancing climate resilience, conserving biodiversity, and achieving long-term sustainability.

Biography

Banki Thomas Chunwate is affiliated with Nasarawa State University, Nigeria, and is actively involved in research related to ecosystem services, biodiversity conservation, and climate resilience. His work focuses on understanding the relationship between forest-dependent communities and sustainable environmental management practices in Nigeria. His research interests include climate adaptation strategies, community-based conservation, and the role of ecosystems in supporting livelihoods and environmental sustainability. Through his academic contributions, Chunwate aims to promote awareness and practical solutions for biodiversity protection and climate resilience in developing regions.