African Oceanography Studies (Earth Science focus)

Water Supply Solutions in Indigenous Atacama Desert Communities: A Comparative Study Over Four Years in Equatorial Guinea

Evaristo Muxiguez[1], **Margarita Nguema**[2]

[1] National University of Equatorial Guinea (UNGE)

[2] Department of Advanced Studies, National University of Equatorial Guinea (UNGE)

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Correspondence: emuxiguez@gmail.com

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Author notes

Evaristo Muxiguez is affiliated with National University of Equatorial Guinea (UNGE) and focuses on Environmental Science research in Africa.

Margarita Nguema is affiliated with Department of Advanced Studies, National University of Equatorial Guinea (UNGE) and focuses on Environmental Science research in Africa.

Abstract

The Atacama Desert in Equatorial Guinea faces significant water scarcity challenges, impacting indigenous communities' livelihoods. A mixed-method approach including surveys, interviews, and hydrological data analysis was employed to assess the impact of infrastructure development on community resilience. Water scarcity conditions varied significantly across communities, with some experiencing a 20% reduction in annual water availability, influencing agricultural productivity trends positively or negatively based on local resource management strategies. Infrastructure projects had mixed effects; while they improved access to clean water, their benefits were context-dependent and influenced by community adaptation efforts. Communities should prioritise locally adapted solutions that consider both immediate needs and long-term sustainability. Infrastructure design should incorporate user feedback for optimal performance. The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Atacama Desert, Indigenous Communities, Water Scarcity, Hydrology, Policy Analysis, Climate Change Adaptation, Sustainable Development*

ABSTRACT-ONLY PUBLICATION

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