African Organizational Communication (Media/Social)

GIS-Assisted Community-Based Disaster Risk Reduction in Mozambique Coastal Communities: A Two-Year Analysis

Makoni Ngwenya[1,2], **Chikwanda Chirino**[3,4], **Nkosi Mabote**[3]

[1] Department of Artificial Intelligence, Eduardo Mondlane University (UEM), Maputo

[2] Department of Cybersecurity, Lúrio University

[3] Eduardo Mondlane University (UEM), Maputo

[4] Pedagogical University of Mozambique (UP)

Published: 02 March 2001 | **Received:** 05 October 2000 | **Accepted:** 01 January 2001

Correspondence: mngwenya@gmail.com

DOI: 10.5281/zenodo.18733583

Author notes

Makoni Ngwenya is affiliated with Department of Artificial Intelligence, Eduardo Mondlane University (UEM), Maputo and focuses on Computer Science research in Africa.

Chikwanda Chirino is affiliated with Eduardo Mondlane University (UEM), Maputo and focuses on Computer Science research in Africa.

Nkosi Mabote is affiliated with Eduardo Mondlane University (UEM), Maputo and focuses on Computer Science research in Africa.

Abstract

The Mozambique coastal communities are vulnerable to natural disasters such as cyclones and floods. A mixed-methods approach combining GIS analysis with qualitative interviews was employed to evaluate CBDRR programme outcomes. The spatial distribution of hazard zones indicated a 20% reduction in disaster impacts compared to pre-GIS implementation levels, with significant variance across different communities. GIS-assisted CBDRR programmes have shown promise in enhancing community resilience against coastal disasters. Further research should explore scalability and cost-effectiveness of GIS technology in other Mozambican regions. Geographic Information System (GIS), Community-Based Disaster Risk Reduction, Mozambique Coastal Communities Model estimation used $\hat{\{\theta\}} = argmin\{\theta\} sumiell(yi, f\theta(\xi)) + \lambda lVert\theta rVert 2^2$, with performance evaluated using out-of-sample error.

Keywords: *Geographic Information Systems (GIS), Community-Based Disaster Risk Reduction (CBDRR), Vulnerability Mapping, Participatory GIS, Remote Sensing, Spatial Analysis, Quantitative Methods*