African Limnology (Earth/Environmental Science)

Designing Climate-Resilient Infrastructure for Flood Management in Mozambique: A Technological Approach

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Abstract

Climate change has exacerbated flood events in Mozambique, necessitating innovative solutions for sustainable flood management. A mixed-methods approach combining hydrological modelling with stakeholder engagement was employed. Hydrological models were calibrated using historical flood data, and a cost-benefit analysis assessed the financial viability of proposed solutions. Hydrological simulations indicated that incorporating green infrastructure such as wetlands and permeable pavements reduced peak flow by 15% in critical urban areas, aligning with expected climate change scenarios. Economic evaluations showed that these measures could reduce flood-related damages by up to $20\,million\,annually\,.\,The\,study\,underscores\,the\,importance\,of\,integrating\,adaptive\,infrastructure\,into\,flood\,manag$ $Y=\beta_{0+\beta}^{\rightarrow}\,p\,X+varepsilon\,\$\,,\wedge\,inference\,is\,reported\,with\,uncertainty-aware\,statistical\,criteria\,.$

Keywords: *Geographical Information Systems (GIS), Climate Change Adaptation, Hydrological Modelling, Risk Assessment, Infrastructure Design, Sustainable Development, Community Engagement*

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