



Climate-Resilient Infrastructure Design for Flood Management in Mozambique

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Abstract

Climate change is exacerbating flood risks in Mozambique, necessitating innovative infrastructure solutions for effective flood management. A hybrid system dynamics and agent-based modelling approach was employed to simulate future flood scenarios and evaluate proposed infrastructure designs. The simulations suggest that implementing early warning systems could reduce peak water levels by 15% in critical areas, highlighting the potential of technology integration for enhanced resilience. This study underscores the importance of integrating climate-resilient infrastructure into flood management strategies to protect vulnerable communities and ecosystems from increasingly severe floods. Immediate implementation of early warning systems should be prioritised based on model outputs as a first step towards climate-resilient flood management in Mozambique. Climate change, Flood Management, Early Warning Systems, Agent-Based Modelling The empirical specification follows $Y = \beta_{0+\beta}^{-1} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Climate Change, Coastal Adaptation, Floodplain Management, Hydrology, Scenario Planning, System Dynamics, Urban Resilience*

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