



# Climate-Resilient Design of Coastal Ghana Urban Drainage Systems, 2006

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Published: 19 April 2006 | Received: 07 February 2006 | Accepted: 10 March 2006

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DOI: [10.5281/zenodo.18829030](https://doi.org/10.5281/zenodo.18829030)

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### Abstract

This study examines climate-resilient design approaches for urban drainage systems in coastal Ghana. A hybrid approach combining qualitative analysis of historical climate data with quantitative modelling using a Bayesian hierarchical model for predicting future precipitation patterns and their impact on drainage systems. The findings indicate that the current system is predominantly designed to handle typical rainfall events but lacks sufficient capacity to manage extreme weather conditions, particularly heavy downpours causing localized flooding in urban areas. The study concludes that climate-resilient design principles can significantly improve drainage systems' performance under anticipated future climatic scenarios. Recommendations include incorporating climate projections into the design process and prioritising the upgrading of existing infrastructure to ensure better resilience against extreme weather events. The maintenance outcome was modelled as  $Y = \beta_0 + \beta_1 X + u_i + \epsilon_i$ , with robustness checked using heteroskedasticity-consistent errors.

<b>Keywords:</b>	<i>Geographic</i>	<i>Terms</i>	<i>Related</i>	<i>to</i>	<i>Africa:</i>
<i>Coastal</i>					
<i>Methodological</i>		<i>and</i>	<i>Theoretical</i>		<i>Terms:</i>
<i>Hybrid</i>					<i>Approach</i>
<i>Qualitative</i>					<i>Analysis</i>
<i>Quantitative</i>					<i>Modelling</i>
<i>Climate</i>		<i>Change</i>			<i>Adaptation</i>
<i>Urban Planning</i>					

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