



Climate-Resilient Design Principles for Urban Drainage Systems in Coastal Ghana 2007

Brightson Owusu¹

¹ Noguchi Memorial Institute for Medical Research

Published: 12 November 2007 | **Received:** 29 August 2007 | **Accepted:** 21 October 2007

Correspondence: bowusu@gmail.com

DOI: [10.5281/zenodo.18850434](https://doi.org/10.5281/zenodo.18850434)

Author notes

Brightson Owusu is affiliated with Noguchi Memorial Institute for Medical Research and focuses on Engineering research in Africa.

Abstract

Urban drainage systems in coastal regions like Ghana's require design principles that are resilient to climate change impacts such as increased rainfall and sea-level rise. A review of existing literature and field observations was conducted to inform the development of design principles. Statistical models were used to simulate rainfall patterns under different scenarios. Simulations showed that a 10% increase in annual rainfall could lead to a 25% rise in peak discharge, necessitating adjustments in drainage system capacity designs. The developed design guidelines aim to enhance the resilience of urban drainage systems against climate change impacts without compromising water quality standards. Implementing these design principles requires stakeholder engagement and investment in monitoring and maintenance to ensure long-term effectiveness. The maintenance outcome was modelled as $Y = \beta_0 + \beta_1 X + u + \epsilon$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: Sub-Saharan, Africa, Hydrology, Modelling, Sustainability, Watershed, Geographic

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

✉ **REQUEST FULL PAPER**

Email: info@parj.africa

Request your copy of the full paper today!

SUBMIT YOUR RESEARCH

Are you a researcher in Africa? We welcome your submissions!

Join our community of African scholars and share your groundbreaking work.

Submit at: app.parj.africa



Scan to visit app.parj.africa

Open Access Scholarship from PARJ

Empowering African Research | Advancing Global Knowledge