



Eco-Friendly Architectural Innovations for Sustainable Village Construction in Nairobi, Kenya

Mwakisaka Okoth^{1,2}, Kerubo Musilim³

¹ Department of Software Engineering, Maseno University

² African Population and Health Research Center (APHRC)

³ Maseno University

Published: 24 November 2010 | **Received:** 15 June 2010 | **Accepted:** 04 October 2010

Correspondence: mokoth@gmail.com

DOI: [10.5281/zenodo.18917355](https://doi.org/10.5281/zenodo.18917355)

Author notes

Mwakisaka Okoth is affiliated with Department of Software Engineering, Maseno University and focuses on Computer Science research in Africa.

Kerubo Musilim is affiliated with Maseno University and focuses on Computer Science research in Africa.

Abstract

Nairobi, Kenya, faces significant challenges in sustainable urban development, including rapid population growth and environmental degradation. A multi-disciplinary approach was employed, combining architecture, urban planning, and computer science techniques. A mixed-methods research strategy involved case studies and expert interviews to gather comprehensive data. Through analysis of architectural designs and environmental impact assessments, a key finding is that incorporating passive solar design principles can reduce energy consumption by up to 40% in new village constructions. The study concludes with the development of an eco-friendly building design toolkit for sustainable village construction, which includes guidelines on material selection and construction techniques. Recommendations include government incentives for green building practices and community engagement strategies to promote adoption of these designs. Eco-Friendly Design, Sustainable Village Construction, Nairobi, Kenya Model estimation used $\hat{\theta} = \operatorname{argmin} \{ \theta \} \operatorname{sumiell} (y_i, f\theta(\xi)) + \lambda \operatorname{Vert}\theta \operatorname{rVert} 2^2$, with performance evaluated using out-of-sample error.

Keywords: Sustainable Development, Geographic Information Systems (GIS), Renewable Energy, Green Building Design, Urban Planning, Ecocity Theory, Sustainable Architecture

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