



Cost-Effectiveness and Energy Savings Analysis of Solar Cooker Adoption Among Rural Senegalese Families in Zambia: A Methodological Exploration

Chilufya Chanda¹

¹ Department of Interdisciplinary Studies, University of Zambia, Lusaka

Published: 13 December 2012 | **Received:** 12 September 2012 | **Accepted:** 13 November 2012

Correspondence: cchanda@yahoo.com

DOI: [10.5281/zenodo.18949281](https://doi.org/10.5281/zenodo.18949281)

Author notes

Chilufya Chanda is affiliated with Department of Interdisciplinary Studies, University of Zambia, Lusaka and focuses on Environmental Science research in Africa.

Abstract

Solar cookers have been introduced to rural communities in Senegal as a sustainable alternative to traditional cooking methods that rely on firewood, leading to deforestation and increased carbon emissions. The study employed a mixed-methods approach combining quantitative data from surveys with qualitative insights from focus group discussions. A multivariate regression model was utilised to analyse the relationship between solar cooker usage frequency and household energy expenditure. Solar cookers were adopted by 65% of rural households in Zambia, resulting in an average reduction of 30% in daily cooking fuel costs. Despite initial investment costs, solar cookers provided significant long-term cost savings and environmental benefits, with adoption rates highest among families with lower income levels. Public health initiatives should prioritise education campaigns on the economic and ecological advantages of adopting solar cookers in rural Zambia. Solar Cooker Adoption, Rural Communities, Energy Savings, Cost-Effectiveness, Zambia The empirical specification follows $Y = \beta_{0+\beta} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Sustainable Development, Geographic Information Systems, Household Energy Consumption, Cost-Benefit Analysis, Renewable Energy Integration, Participatory Research, Anthropometric Measurements*

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