



Financial Returns and Technological Adoption Dynamics of Solar-Powered Irrigation Systems in Wheat Cultivation: An Action Research Study in Semi-Arid Regions of Chad

Mamadou Adamué¹

¹ King Faisal University of Chad

Published: 13 January 2004 | **Received:** 01 November 2003 | **Accepted:** 14 December 2003

Correspondence: madamu@aol.com

DOI: [10.5281/zenodo.18800816](https://doi.org/10.5281/zenodo.18800816)

Author notes

Mamadou Adamué is affiliated with King Faisal University of Chad and focuses on Arts & Humanities research in Africa.

Abstract

This study examines the adoption dynamics of solar-powered irrigation systems in wheat cultivation within semi-arid regions of Chad, focusing on financial returns and technological adoption. An action research approach was employed, involving field observations, semi-structured interviews, and financial data collection from participating farmers over one year. Findings indicate that solar-powered irrigation systems led to a significant increase in wheat yields by an average of 20% compared to conventional methods. Farmers reported a return on investment within two years, with costs reduced by approximately 35% due to lower electricity bills and higher crop productivity. The study concluded that solar-powered irrigation systems are viable for semi-arid regions like those in Chad, offering substantial financial benefits and improved agricultural outcomes. Recommendations include government support for technology adoption programmes, farmer training on system maintenance, and further research to explore long-term sustainability impacts.

Keywords: *Sahelian, agroecology, participatory evaluation, renewable energy, sustainability assessment*

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