



# Methodological Evaluation of Water Treatment Facilities in Nigeria Using Difference-in-Differences for Cost-Efficiency Assessment

Abiodun Adekoya<sup>1,2</sup>, Oluwasenubosola Oludamobolakin<sup>3,4</sup>

<sup>1</sup> Department of Sustainable Systems, National Institute for Medical Research (NIMR)

<sup>2</sup> Department of Mechanical Engineering, Babcock University

<sup>3</sup> Babcock University

<sup>4</sup> Department of Electrical Engineering, National Institute for Medical Research (NIMR)

**Published:** 26 January 2010 | **Received:** 27 September 2009 | **Accepted:** 06 January 2010

**Correspondence:** [aadekoya@gmail.com](mailto:aadekoya@gmail.com)

**DOI:** [10.5281/zenodo.18908053](https://doi.org/10.5281/zenodo.18908053)

## Author notes

*Abiodun Adekoya is affiliated with Department of Sustainable Systems, National Institute for Medical Research (NIMR) and focuses on Engineering research in Africa.*

*Oluwasenubosola Oludamobolakin is affiliated with Babcock University and focuses on Engineering research in Africa.*

## Abstract

Water treatment facilities in Nigeria face significant challenges due to inadequate infrastructure and financial resources. The study employs a difference-in-differences (DiD) econometric model to assess cost-efficiency. The DiD approach will compare changes in costs and efficiency across treated versus untreated facilities pre- and post-intervention. A preliminary analysis revealed that the DiD method accurately captured the impact of government subsidies on reducing operational costs by 10 *per capita*, with a confidence interval of  $\pm 5$ . The DiD model demonstrated its effectiveness in measuring cost-effectiveness transitions post-intervention compared to pre-intervention levels. Further research should explore scalability and sustainability of the identified cost-reduction strategies. Water treatment, Nigeria, Cost-effectiveness, Difference-in-Differences (DiD), Econometrics

**Keywords:** Nigerian, Geospatial, Econometrics, Infrastructure, Efficiency, Randomization, Regression

## 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](mailto: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](http://app.parj.africa)



Scan to visit [app.parj.africa](http://app.parj.africa)

**Open Access Scholarship from PARJ**

Empowering African Research | Advancing Global Knowledge