

Innovative Efficiency, Energy Use and Territorial Disparities: A Municipal DEA Assessment for Paraná

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ABSTRACT

Innovation efficiency is crucial for regional development, yet remains uneven across territories. This study evaluates the innovative efficiency of Paraná's 399 municipalities in 2021, examining their ability to transform energy use and knowledge-intensive activity capacity into GDP and intellectual property outcomes. An output-oriented DEA model and a log-linear OLS regression were applied. Results show substantial disparities, with most municipalities operating below the efficiency frontier. Energy use and KIA density increase efficiency, while GDP and PI display negative elasticities. The study offers insights for place-based policies aimed at strengthening local innovation ecosystems.

KEYWORDS: Innovation; DEA; Energy Efficiency; Territorial Disparities; Paraná.

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