

When the Wind Blows: Socioeconomic and Environmental Dimensions of Wind Energy in Paraíba's Semi-Arid Region

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Introdução

Wind energy has grown in Brazil's Northeast as a response to climate and energy transitions. In Paraíba's semi-arid region, large-scale projects stimulate debate over their local impacts. This study analyzes the Serra da Palmeira Wind Complex, examining how agents involved in construction perceive socioeconomic and environmental outcomes. The research contributes to discussions on renewable energy transitions in vulnerable contexts where opportunities and conflicts often coexist.

Problema de Pesquisa e Objetivo

Wind complexes generate jobs, investments, and services, but also create pressures on local markets and the environment (Vasconcellos & Couto, 2021). The guiding question is: How do companies and subcontractors perceive the socioeconomic and environmental impacts of the Serra da Palmeira project? The objective is to identify perceived opportunities and barriers related to local economies, labor markets, and environmental practices during the construction phase in Paraíba's semi-arid region.

Fundamentação Teórica

Studies in Brazil highlight socioeconomic benefits of wind power, such as job creation and local business stimulation, but also reveal supply chain dependence and uneven benefit distribution (Vasconcellos & Couto, 2021). Research in Northeast Brazil points to conflicts and planning weaknesses (Gorayeb et al., 2018). International analyses stress that community acceptance and governance are decisive for renewable energy transitions in vulnerable regions (Brannstrom et al., 2022).

Metodologia

A qualitative approach with semi-structured interviews was applied. Nine participants were consulted, including technicians from CTG Brasil, Goldwind, and subcontractors. Interviews explored economic, social, and environmental aspects such as labor generation, supply chains, services, and resource management. This design enabled the reconstruction of how external agents perceived the impacts of the Serra da Palmeira Wind Complex in municipalities of Paraíba's semi-arid region.

Análise e Discussão dos Resultados

The Serra da Palmeira project mobilized R\$ 3.7 billion, created about 2,000 jobs—30% local—and stimulated regional businesses. Women filled 20% of vacancies, reflecting inclusion trends (Brannstrom et al., 2022). Challenges included limited suppliers, lack of recycling cooperatives, water scarcity, and deforestation of 560 hectares, consistent with other projects in the Northeast (Gorayeb et al., 2018). Interviewees perceived temporary economic benefits alongside structural constraints in governance and management.

Considerações Finais

Findings suggest that the Serra da Palmeira Wind Complex delivered short-term economic benefits, while barriers such as weak environmental management, scarce water resources, and limited supply chains restrict lasting effects. In this context, the transition to renewable energy is perceived as incomplete and dependent on stronger governance (Vasconcellos & Couto, 2021). The study is limited to interviews conducted during the construction phase. Future research should include community perspectives, operational phases, and policy reforms.

Referências

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Palavras Chave

Renewable Energy, Socioeconomic Impacts, Environmental Management

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