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## Modeling and Assessment of Wind Energy Potential in the Department of Nariño Colombia

Ballesteros K<sup>1</sup>, Solano R<sup>2\*</sup>, Campo E<sup>3</sup>, Rodríguez M<sup>3</sup>

 <sup>1</sup>Particles and Processes Modeling Research Group. School of Engineering.
<sup>2</sup>Nanomaterials and Computer aided process engineering Research Group. School of Engineering. Universidad de Cartagena. Cartagena, Colombia.
<sup>3</sup>Design of Processes and Use of Biomass Research Group, School of Engineering. Universidad de Cartagena. Cartagena, Colombia.

**Abstract :** This work seeks to evaluate the energy potential of the department of Nariño to different types of wind turbines and this heights; the economic evaluation to establish the viability of renewable energy. The average wind speed was 5.6 m/s with values between 4 and 8.5 m/s, adjusted to the probabilistic Rayleigh model. The results show that the department of Nariño can generate 31,267,194.55 kW/year, depending on the power of the wind turbine (400-3000 kW) and the heights 50, 70 and 90 meters. The economic pre-feasibility indicates that the wind turbine Vestas V80 2000 kW had the lowest generation cost with 0.00414263 USD / kWh, which was considered attractive for the financial indicators of the project. **Keywords :** Wind turbine, modeling and simulation, wind potential, alternative energy, Prefeasibility.

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