

Prospects For Electricity Generation From The Wind Potential Of Zamala In Cameroon

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Abstract

Promoting sustainable development and combating climate change have become integral aspects of energy planning, analysis and policy making in many countries. Zamala is a village of about 500 people, around the town of Maroua in the Far North Region of Cameroon. The lack of electricity is a brake on the well-being of this population and this limits the growth of their economic activity which is mainly based on agriculture and cattle farming. In this study, we have investigated the possibility to consider a small wind farm as a decentralised household energy solution. For this purpose, different kinds of data have been collected about climate, topography, and wind. The Observed Wind Climate of the meteorological station has been made. The Wind Atlas has been calculated, especially in the high wind resource areas. Also, a wind resource map has been drawn in order to select the best site for the wind power plant. From our assessment, the mean wind speed is 4.5 m/s and the power density is 101 W/m²; this result illustrates the strong potential of our site. Annual Energy Production of our hypothetical wind farm consisting of six Nordex wind turbines has been computed using the WAsP software. The computed Annual Energy Production is 16,330 MWh which represents the annual electricity consumption of more than 5,000 people. The additional energy production could be connected to the electricity grid of Maroua. We are expecting that with the Africa - EU research collaborations, the involvement of public and private investors, this project could come true and hence solve the problem faced by the people living in that rural area.

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