

Accepted Manuscript

Optimal windy sites in Algeria: Potential and perspectives

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PII: S0360-5442(17)32079-0

DOI: [10.1016/j.energy.2017.12.046](https://doi.org/10.1016/j.energy.2017.12.046)

Reference: EGY 11995

To appear in: *Energy*

Received Date: 8 September 2017

Revised Date: 14 November 2017

Accepted Date: 11 December 2017

Please cite this article as: Nedjari HD, Haddouche SK, Balehouane A, Guerri O, Optimal windy sites in Algeria: Potential and perspectives, *Energy* (2018), doi: 10.1016/j.energy.2017.12.046.

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Abstract

The Algerian government has established an attractive policy to encourage investment in the wind energy by installing 5 GW of wind power by 2030. It has focused on collaborations and calls for investment from outside wind energy companies. However, this energy sector development requires the identification of potentially windy sites. This study was performed in order to determine new optimal sites in Algeria that may be eligible to receive the wind farm projects. Therefore, data from about 74 new sites were identified and assimilated to verify and update the wind resource estimates. Hourly wind speeds data were used for the establishment of the annual and seasonal wind maps at 10 m and 80m a.g.l. As the wind map updates highlighted important changes in the wind resource, the wind potential sensitivity to the data time period was evaluated. The windy sites were classed on the basis of the NREL international standards. However, In order to ensure an adequate return on investment, the other objective of this study was to identify the optimal sites using a multi-criteria analysis based on the GIS method. Considering additional factors as network availability and wind energy previsions, different strategic scenarios of wind farms planning were proposed.

Keywords: average wind maps; optimal windy site; data quality; GIS method

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