

Optimal Localization of Wind Turbines Using the Weighted Overlay Model by Application to the Red Sea Governorate by ArcMap 10.3 Program

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Abstract:

Egypt currently has a high reliance on wind energy, as it only accounts for 12% of the total 20% of electricity produced by renewable sources. Due to the availability of the necessary resources and sites to establish wind energy at Egypt's level, it is necessary to give wind energy priority and increase dependence on it. To do this, it is necessary to develop a model for determining the regions that are suitable for locating wind farms, taking into account a number of variables, in order to make effective use of this resource and use it as a guide when locating wind energy projects in Egypt in the future, which aims to reduce greenhouse gas emissions to address the issue of climate change and progressively wean the world off of reliance on conventional energy sources by reaching the proportion of the contribution of renewable energy to 42% of the total electrical energy Product in 2035 (Mariel, Meyerhoff, & Hess, 2014). Through a proposed form, the research will highlight the key factors to take into account when choosing wind turbine locations, and the GIS application will be used to create the form and eliminate any maps.

Keywords:

Renewable energy - Wind energy - Wind turbines localization - Red Sea Governorate - the Weighted Overlay model - GIS modeling.

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