

Preliminary study of offshore wind farm sites on the Southern coast of Brazil

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Abstract

Wind power is one of the options for sustainable power generation in the world. Moreover, offshore wind farms are considered more efficient compared to onshore wind farms. Due to the absence of obstacles, the wind profile offshore is stronger and more consistent, and wind power is greater offshore. In the Southern coast of Brazil, near the town of Rio Grande (32° S, 52° W), there are several successful onshore wind farms, which indicate that offshore wind farms in this region could be even more prosperous. Site selection for the installation of offshore wind farms has to fulfil several criteria. We have applied some of them to indicate potential locations for the construction of wind farms off the coast of Rio Grande. We considered the coastal bathymetry, the type of foundation suitable for the coastal platform deep, the intensity of the wind, and the network of transmission lines. The navigation routes were also considered, because there is a large port nearby. We determined that the area that presents better accordance to those criteria has about 165 square kilometres, which is about one fourth of the area of Great Britain's largest offshore wind farm. It is up to 100 kilometres far from the shore, with a deep between 20 and 50 meters, with persistent strong winds similar to those of the North Sea, where many European offshore wind farms are located. Therefore, there is great potentiality for the installation of offshore wind farms near Rio Grande.

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Keywords: Wind power, offshore wind farms, Southern coast of Brazil