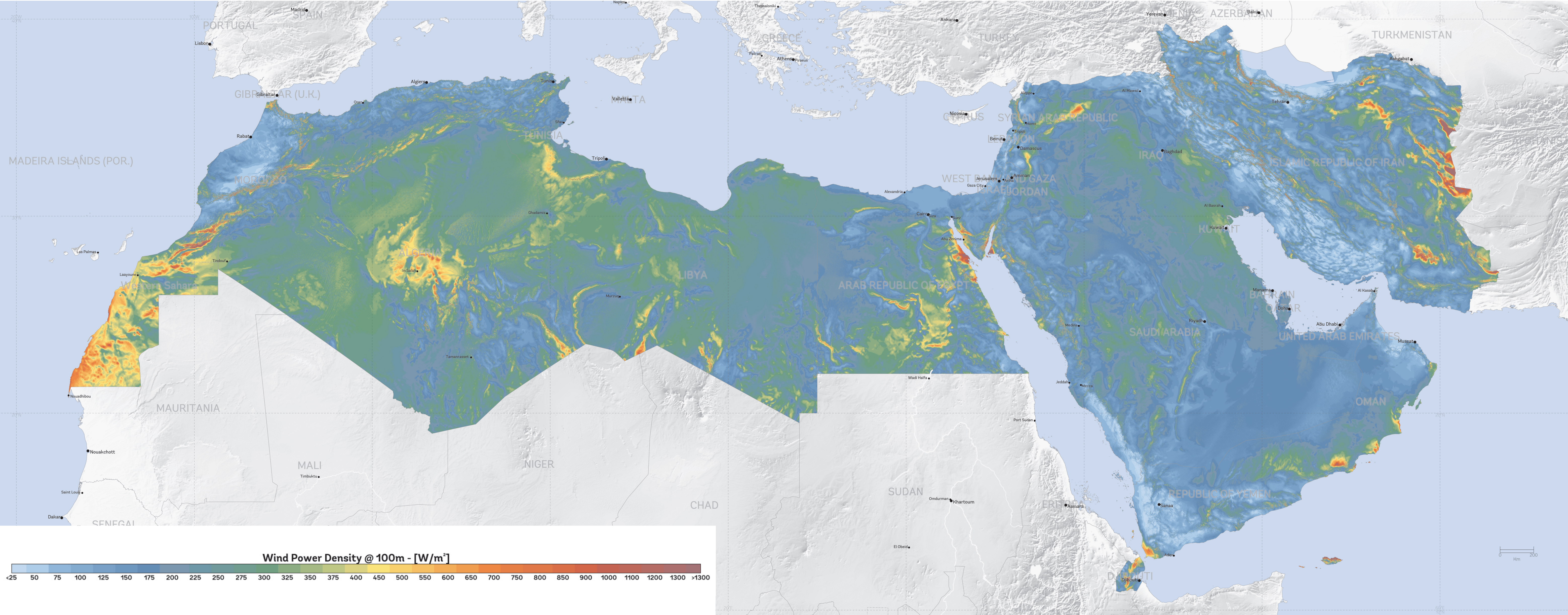


WIND POWER DENSITY POTENTIAL

MIDDLE EAST AND NORTH AFRICA



DESCRIPTION

This wind resource map provides an estimate of mean wind power density at 100 m above surface level. Power density indicates wind power potential, part of which can be extracted by wind turbines. The map is derived from high-resolution wind speed distributions based on a chain of models, which downscale winds from global models (~30 km), to mesoscale (3 km) to microscale (250 m). The Weather Research & Forecasting (WRF) mesoscale model uses ECMWF ERA-5 reanalysis data for atmospheric forcing, sampling from the period 1998-2017. The WRF output at 3 km resolution is generalized and downscaled further using the WAsP software, plus terrain elevation data at 150 m resolution, and roughness data at 300 m resolution. The microscale wind climate is sampled on calculation nodes every 250 m. For the microscale modeling, the terrain data is derived from the digital elevation models from Viewfinder Panoramas. The WAsP microscale modeling uses a linear flow model. For steep terrain, this modeling becomes more uncertain, most likely leading to an overestimation of mean wind speeds on ridges and hilltops. Users are recommended to inspect the terrain complexity of their region of interest.

ABOUT

The World Bank Group has published this wind resource map using data from the Global Wind Atlas version 3, to support the scale-up of wind power in our client countries. This work is funded by the Energy Sector Management Assistance Program (ESMAP), a multi-donor trust fund administered by The World Bank and supported by 18 donor partners. It is part of a global ESMAP initiative on Renewable Energy Resource Mapping that covers biomass, hydropower, solar and wind. This map has been prepared by the Technical University of Denmark (DTU Wind Energy) and Vortex FdC S.L. (VORTEX), under contract to The World Bank.

To obtain additional maps and information, please visit:

<https://globalwindatlas.info>

TERMS

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Department of Wind Energy

