

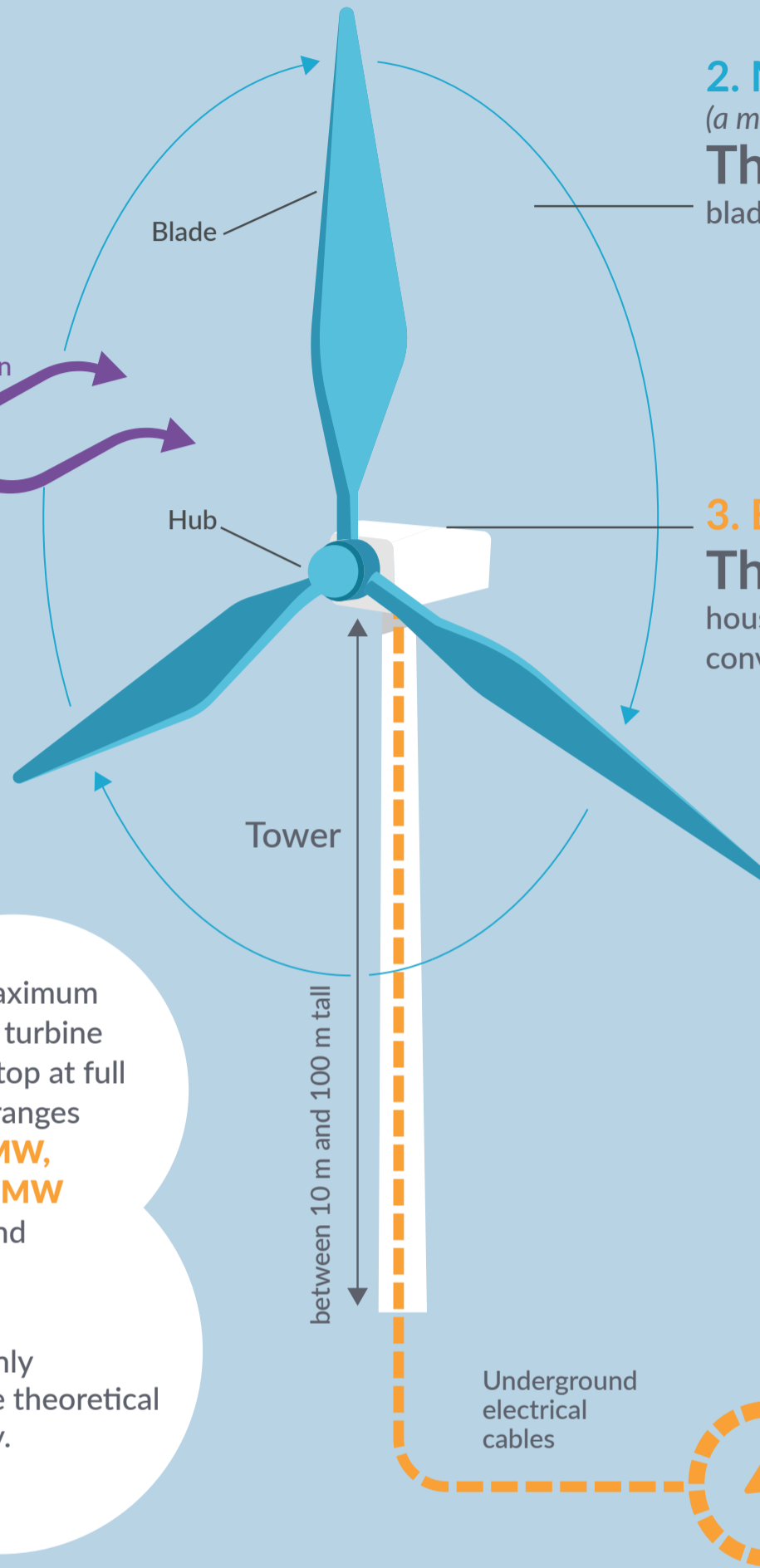
# How do we use wind power to generate electricity?

## 1. Kinetic energy (a moving fluid) The wind

Electricity generation is directly related to wind speed, and is therefore intermittent and irregular.

## 2. Mechanical energy (a moving solid) The rotor: blades + hub of the wind turbine

## 3. Electrical energy The nacelle houses the energy conversion mechanism



The theoretical maximum capacity of a wind turbine (i.e., if it ran non-stop at full output) generally ranges from **1 MW** to **3 MW**, and up to about **6 MW** for an offshore wind turbine.

Actual output is only around **20%** of the theoretical maximum capacity.

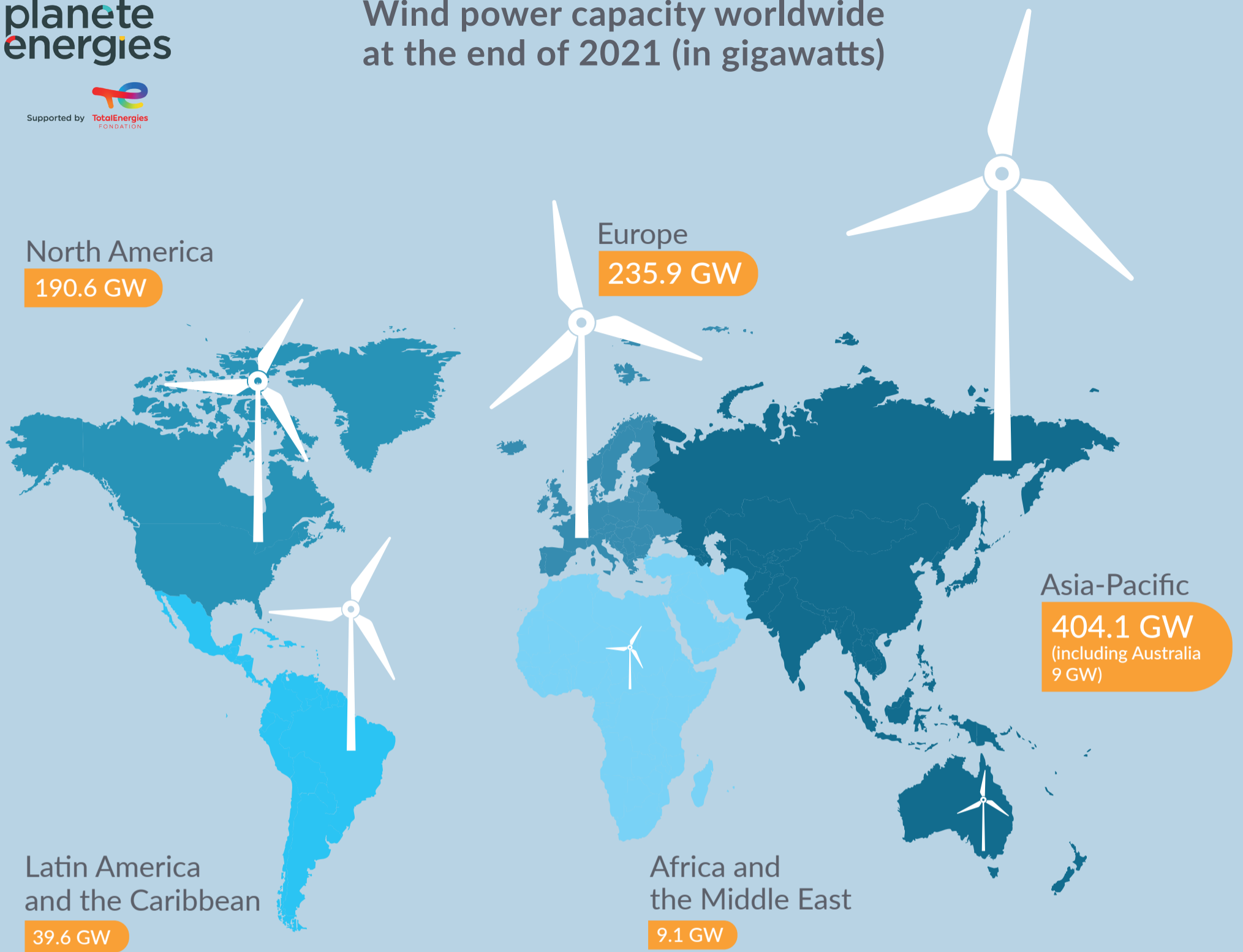
## 7 key considerations when selecting a site for a wind turbine

- 1 Strong winds: wind speeds between 11 and 90 km/h
- 2 Constant wind throughout the year
- 3 Reliable wind speed and direction
- 4 Minimal impact on local wildlife (birds, bats, etc.)
- 5 A minimum distance from housing, which varies from country to country (500 m in France)
- 6 A location accessible to vehicles
- 7 Solid, stable ground

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## Wind power capacity worldwide at the end of 2021 (in gigawatts)



## Aggregate wind power capacity worldwide (in gigawatts)

