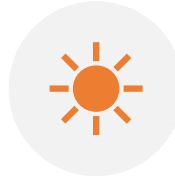


The image features three wind turbines in silhouette against a vibrant sunset sky. The sky transitions from a deep purple at the top to a bright orange and yellow near the horizon, with some wispy clouds. The turbines are positioned in a line from left to right, with the middle one being the most prominent. The overall mood is serene and clean, representing renewable energy.

Wind energy

Madita, Hannah, Lina, Maren, Helen, Mia, Ipek, Roberta

General facts



Renewable source of energy



Pollution free



need less space than other energy stations



Landscape is ruined



inexpensive -> resource wind is free



Can be build onshore (on land) or offshore (on water)

Offshore

- Constructed on water, usually in the ocean
- Stronger than onshore and produces around 50% more energy due to stronger winds
- Last 25-30 years
- Construction costs are much higher
- Difficult to maintain and access
- Landscape is destroyed
- Danger for fish -> lacks



Onshore

- Constructed on land
- Inexpensive (cheaper foundation and integration with electrical-grid network)
- Lasts for around 20 years
- Habitat destructions of plants and animals
- Often build in rural areas -> Industrialisation of the countryside



Advantages	Disadvantages
Reduces consumption of fossil fuels for electricity production	Wind generators are only feasible in areas with consistent wind
Reduces production of greenhouse gases	Wind generators are only feasible in areas near transmission lines
Reduces production of pollution	A wind turbine kills about one bird per year
Can provide extra income for farmers	Wind generators make a humming sound that can be heard nearby
Wind is a renewable energy resource	Wind generators are tall and can block views

Types Of Wind Turbines

5

Horizontal Axis Wind Turbine



Fig.1

Vertical Axis Wind Turbine



Fig.2

Two types of wind turbines

Horizontal-axis (HAWTS)

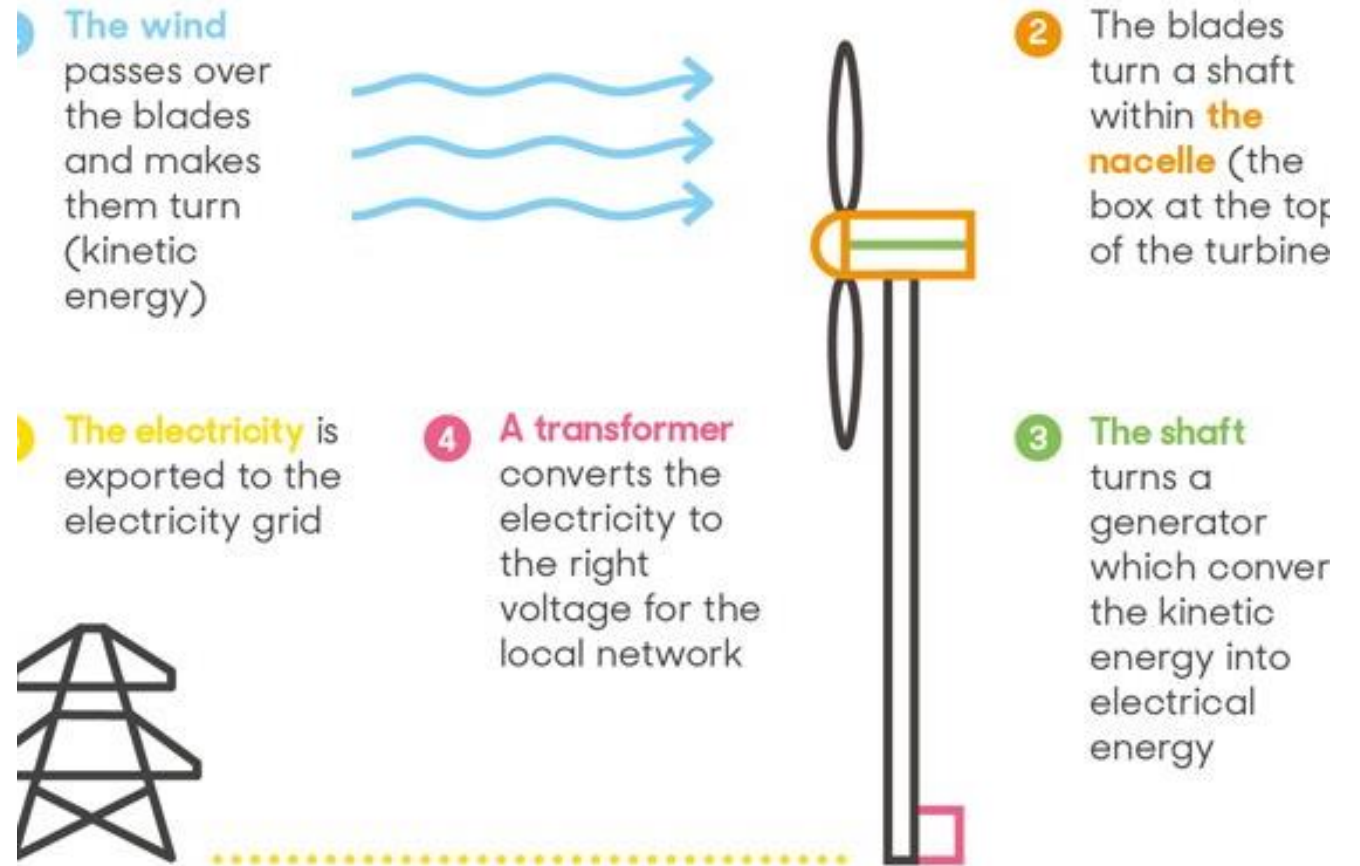
- Higher wind speeds
- Most common one
- Two or three long, thin blades
- Positioned so that they face the wind directly

Vertical-axis (VAWTS)

- Shorter, wider curved blades
- Can produce 100 kilowatts of power
- Enough power for a home

How energy is produced

- Conversion of wind energy into electricity or mechanical energy using wind turbines:
- the rotor first transforms the kinetic energy of the wind into mechanical rotational energy
- a generator converts this energy into electric energy



Difficulties of using wind energy

Wind power must still compete with conventional generation sources on a cost basis

Wind parks are often far away from cities where the energy is needed

Can be very inconsistent (like the sun)

The turbines take away agricultural and fertile land

In some areas it is not possible to build because of tornadoes or hurricanes

Conditions:

High wind speeds

- Areas near or on the ocean
- Areas with higher altitudes

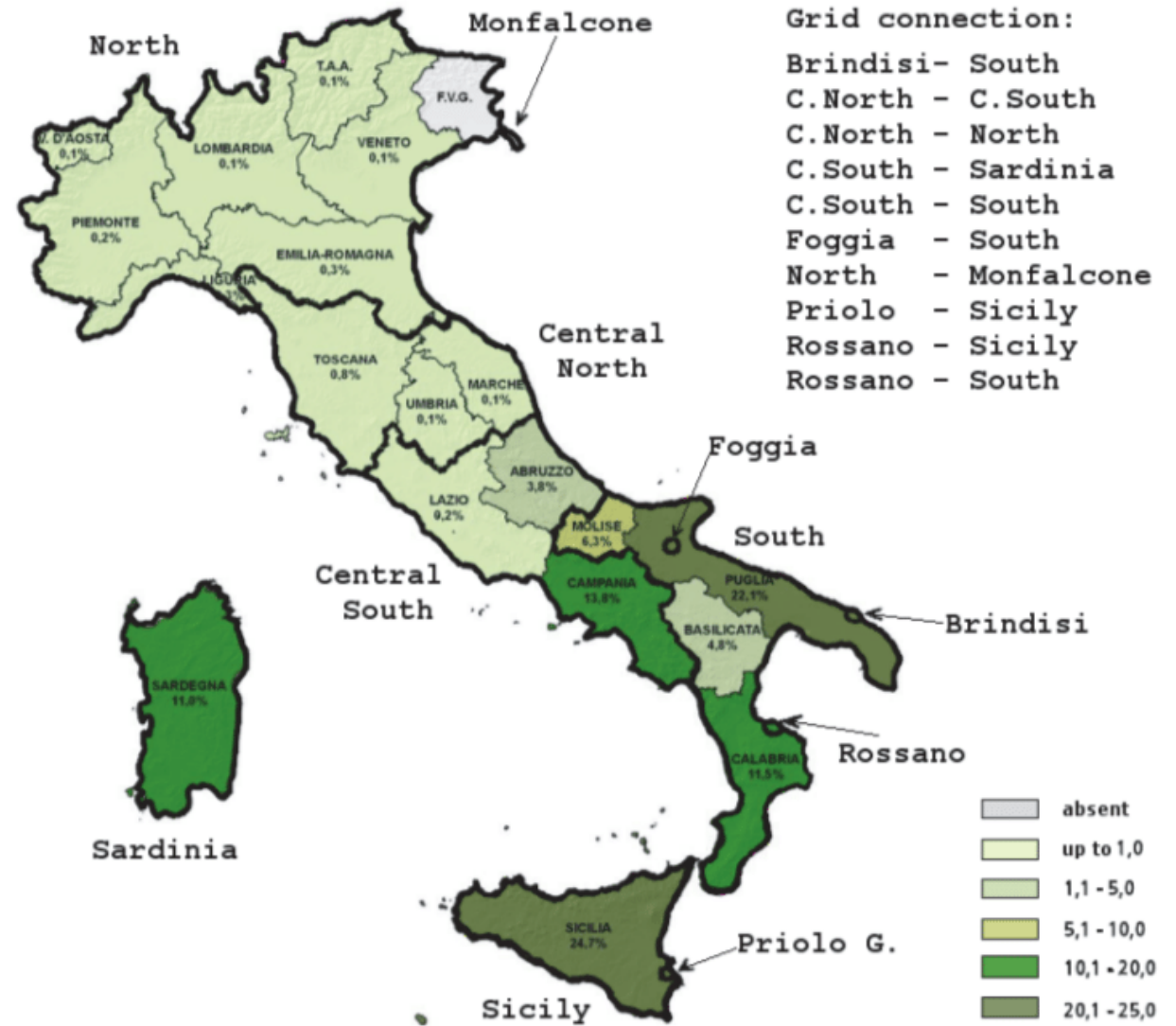
Rural areas (due to noises)

- Not too far away from inhabited areas, because building up long pipelines is expensive

More MEDCs, because it needs financial resources to enable a reliable energy production

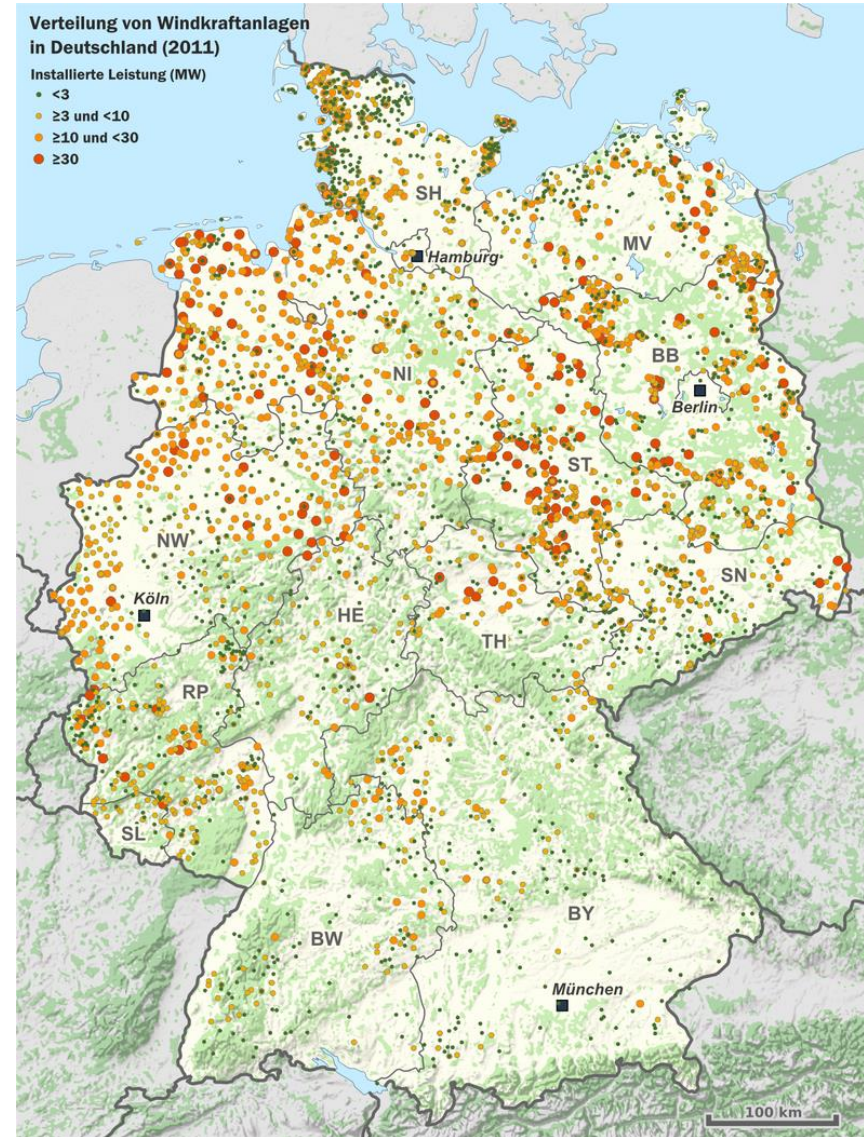
Italy

- Southern Italy
- Sicilia
- Sardegna
- Puglia
- Campania
- Calabria



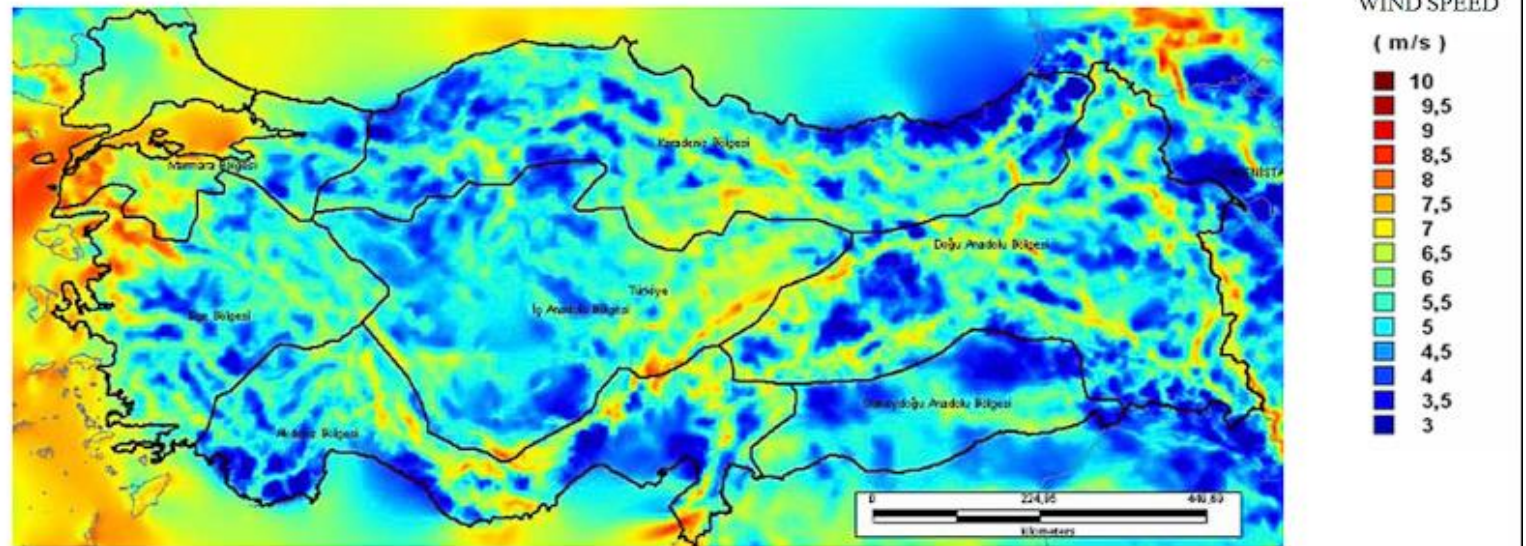
Germany

- Northern Germany
- Mecklenburg-Western Pomerania
- Schleswig-Holstein
- Lower Saxony
- Brandenburg
- Saxony- Anhalt



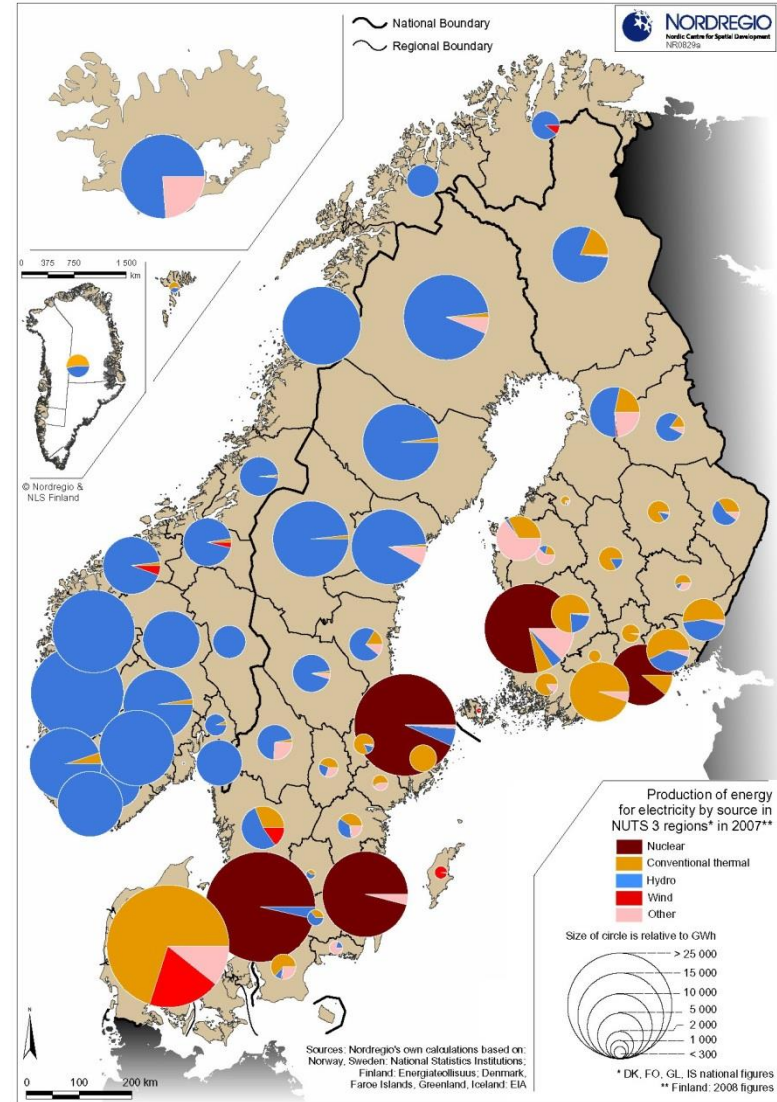
Turkey

- Aegen Region
- Mediterranean Region
- West and central Turkey is suitable
- Hatay, the south of Turkey has speed of 8 m/s as well



Norway

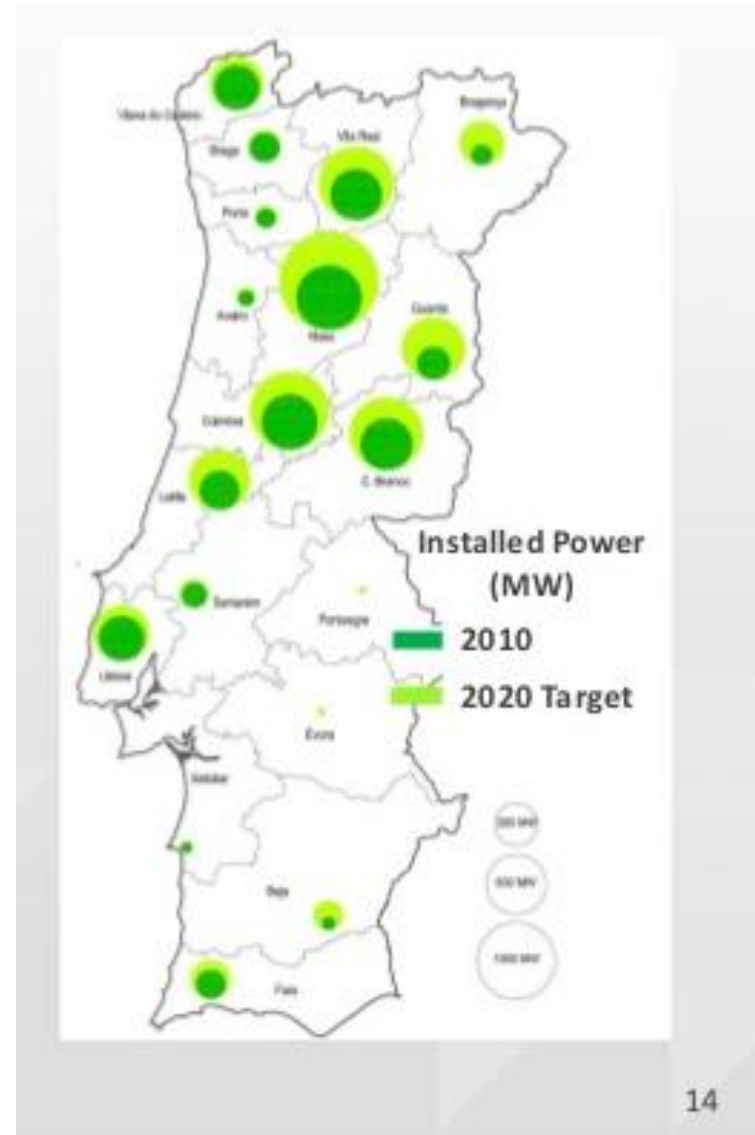
- Nearly no wind energy is used
- High wind speeds in ocean regions
- Almost only hydro energy
- When wind energy is used, then only in the west
- Currently 4 wind parks in operation
- 340.000 households use wind park energy



Map shows production of energy for electricity by source in Nordic NUTS 3 regions in 2007.

Portugal

- Want to enlarge the wind energy production
- Major wind parks in the North
- There are mountains, so more wind
- More densely inhabited



**Not sure if thank you for your
attention**

**or thank you for not
sleeping during the presentation**

