

## Wind power

World wind power capacity is growing at 30% a year and will exceed 100 gigawatts in 2008 – more, for example, than the total generating capacity of Britain from all sources. There is enormous potential for further growth in many parts of the world, particularly if different wind-rich areas are linked together by a supergrid to increase stability of supply. Across a wide region (such as Europe), the supply of wind is fairly stable: when the breeze drops in one place, it is blowing in another. Equally important, through a supergrid wind energy could be carried from areas rich in wind to those with less wind.

Wind turbines convert the kinetic energy in wind into mechanical power, which is in turn converted into electricity through a generator. Mounted 30 meters or more aboveground, they can take advantage of faster and less turbulent wind. Growing numbers of wind turbines are also being deployed offshore.



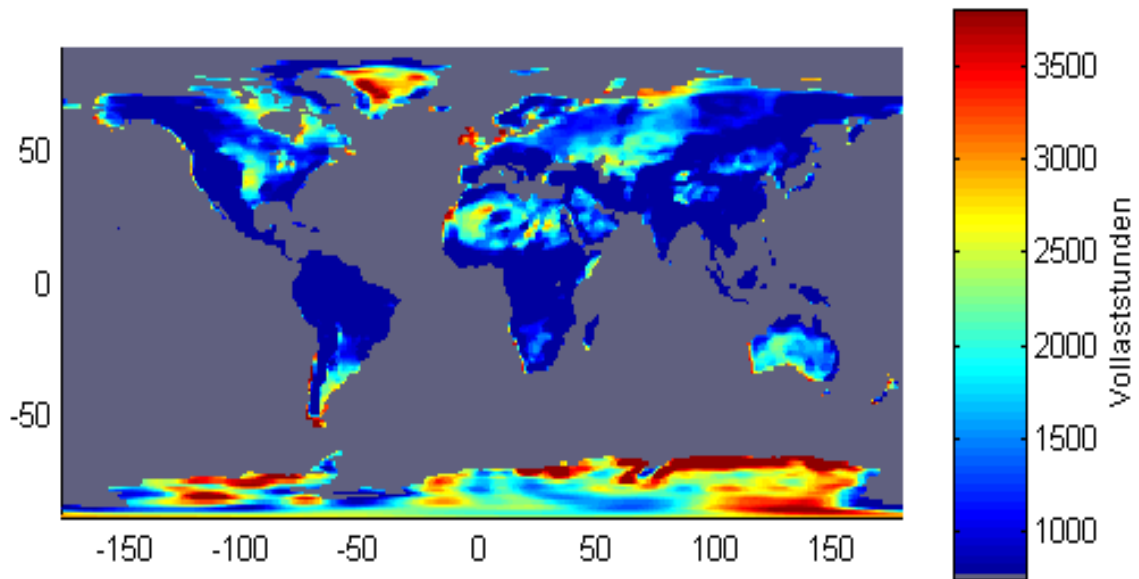
Wind energy is one of the most economical new sources of electricity available today. About 80% of the total cost per watt of installed wind power is comprised of the cost of the turbine itself. As with solar and hydro, the fuel is free. As the hardware becomes cheaper to produce, and turbines more efficient, the cost of wind power is decreasing at a rate of about 3% each year. The cost of wind generated electricity already fell by over 50% in the 15 years leading up to 2003. Today the price of onshore wind energy is below €0.07 per kilowatt hour, making it competitive with natural gas.

The US Department of Energy released a study in May 2008 saying that wind could provide 20% of the US electricity supply by 2030.

The inherent variability of wind power can be compensated for if wind is combined with hydro as backup, so that when the wind drops water is unleashed to maintain a steady electricity supply.

Other technologies are also being developed to enhance the reliability of wind power. Compressed Air Energy Storage (CAES) is being developed in the US state of Iowa as a way of storing the energy produced by wind turbines for future use. Some turbines are used to compress air into underground chambers, which can then be released through a separate turbine whenever additional electricity is needed.

The world wind map below shows the areas of the world that have particularly good wind resources.



As with solar power, there is no limit to the amount of energy we can produce from wind. It is just a question of how many turbines we want to build, and where.