

# Good example of essay on wind energy

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## **Abstract**

The project deals with the problem of wind energy as an alternative power source. The need for green or environmentally safe sources of electricity is a rigid must these days since the amount of emissions and pollutants require humankind to switch to harmless alternatives that will prevent ozone layer from depleting and global warming from evolving into an unstoppable ecological calamity. The project scrutinizes wind energy production capacities in the leading European countries, such the United Kingdom, Germany, Spain, and Denmark, with industry prospects and current energy achievements being given a particular focus of attention. Statistics derived from scientific reports and prominent newspapers was exemplified to visualize current wind energy tendencies.

Keywords: wind, power, energy, production, capacity, alternative, source

Human civilization technological progress has got to the point when industrial achievements and their byproducts are centuries away from ruining the entire planet by delivering a hard-hitting ecological blow. The point is that humankind has atmospheric pollutants depleting the ozone layer, inducing the greenhouse effect, and causing global warming. Carbon gases, chlorofluorocarbon, and methane, to name but a few, produced by fuel-burning industries, spacecraft and jets flights are the main contributors to the ecological calamity of today. To equipoise ecological balance by preventing Antarctic glaciers from melting and raising the level of the World Ocean, scientists have come to develop alternative sources of energy, such as wind power.

Wind power has been used ever since antiquity by mariners for navigating

fleet, or peasants for pumping water and grinding grain into flour by windmills. Nowadays people derive electricity from wind turbines. According to Wind Energy Development Programmatic EIS (n. d.), wind, a form of solar energy, caused by disproportionate heating of atmosphere by the sun is used for the production of electricity and mechanical power or those same purposes they used to serve centuries ago. According to Wind power (n. d.), wind power production capacity has increased by 25% over the last decade; however, this ratio constitutes only a small segment of world demand. Energy generating constructions are 20 stories in size, having 200-foot-long blades. Windmills mounted on a tower rise 100 feet above ground, catching turbulent wind with propeller blades. Such are mounted on a shaft in order to shape a rotor (Wind Energy, n. d.). The process is set in motion with wind spinning blades that turn a shaft attached to a generator tasked with producing electricity. The largest wind turbines are capable of supplying 600 American homes with electricity. Average wind farms are said to have from tens to hundreds of turbines in windy areas. Small turbines installed in a backyard will suffice to supply electricity for a small business or a single home residential area. The whole beauty of wind energy is that it is not only renewable, but also pollutant-free. Once erected, turbines are unlikely to require covering expenses on anything other than maintenance (Wind power, n. d.).

With wind energy cheap, price reducing technologies evolution under way, governmental tax incentives in place, mass production establishment seems to be only a matter of the nearest years. Scepticism on the part of people who believe wind turbines responsible for birds and bats' mortality and enormous

noise as well as the instability of wind are two issues that prevent humankind from fully adopting the new renewable and ecologically tolerant technology. Whatever skepticism, wind energy is on the rise since by 2006 wind energy production had increased to 4 times the per-2000 level. Most recent global wind energy generation capacity was equal to more than 70,000 megawatts. For the record, a single megawatt will suffice to supply 250 homes with electricity in the USA, one of the biggest energy consumers worldwide. The number of wind turbines installed have put Germany first in the world in wind energy production, leaving such countries as the USA, Spain, Denmark, and India, well behind. France and China are thought to be showing the signs of fast development of wind energy production. According to the most conservative estimates, the world will have come to produce a third of world energy demand by harnessing wind by 2050 (Wind power, n. d.).

Marcacci (n. d.) believes that Europe, a traditional leader in wind capacity for a long time with 121,474 MW, installed 12,031 megawatts new capacity in 2013, down almost as much as 8% from 2012, Germany and the United Kingdom being in the lead with 3,238MW and 1,883 MW respectively. According to Chestney (2014), European wind capacity averaged 121,5 gigawatts, up from 110 GW from last year. What Europe should be doing is stabilizing both offshore and onshore markets, which is a must-take measure not that politicians have showed a measure of indecisiveness with their seesaw policies. Global Wind energy Council representatives sounded optimistic as to 2014 and its role in wind production acceleration that has every chance to surpass the 2012 rates (Marcacci, n. d.). Morales (2014) also

does think that EU wind energy installations decreased in 2013 by 8% only to reach the rate of 10, 917 megawatts. Of all 28 members of the European Wind Energy Association, Germany and the UK share the segment of 45% of all energy installations. Conversely, the markets of France, Italy, and Spain have shown the decline from the level of 2012 within the region of 24%, 65%, and 84% respectively. EWEA Deputy CEO Justin Wilkes cited political and regulatory insecurities as key reasons for this trend to persevere. Unstable legislative frameworks were said to have sabotaged investment and exposed jobs and energy security to risk.

Herzog, Lipman, and Kammen (n. d., p. 32) suggest that Germany has added to its energy productive capacity in the course of the past decade. It was in 1997 that the country took over the leading position originally occupied by the USA to become the country with the highest ratio of windmills installed. A number of positive factors have created favorable breeding ground for energy production expansion. Governmental initiatives, such as Electric Feed-in Law that makes sure energy producers receive up to 90% of domestic retail price for electricity as well as low interest loans have put Germany on top of this industry. Another recently enforced piece of legislation was put into effect for renewable energy electricity share to double to 10% in the course of the next decade.

Sinden (2005) claims that electricity is a keystone of British economy and the staple element of living standards. Coal and gas burning stations and nuclear generators are central to the UK electricity industry; still, fossil fuel generators are accountable for critical amounts of gas emissions. As such, they were made British priority, according to Kyoto Protocol. According to

Herzog, Lipman, and Kammen (n. d., p. 33), if compared to other European countries, Great Britain shows fewer signs of wind energy development. Though low in price, most of recent projects able to meet competition, given green light by the bidding process based on the NFFO, or the British Non-Fossil Fuel Obligation, did not prove too successful to enhance wind energy production capacity. As of 2000, the problem used to stem from wind farm energy projects facing problems of receiving permission for building windmills in various areas in spite of obtaining funding from the NFFO. Delays subsequent to construction problems raised governmental concerns since the country had commitments to reduce gas emissions produced by the greenhouse effect. At that juncture, the parliament decided on launching an ad hoc committee called Planning Inspectorate to handle the problem of installation of energy generating facilities. British wind potential largely depends on big-scale offshore wind farms and their development; hence, the country needs to stay focused on constructing these facilities as they did a decade ago.

According to Sinden (2005), in spite of skepticism of late 1990s, the UK is considered one of the most promising European countries based on the capacity of onshore wind turbines that totals 27%, surpassing that of Denmark and Germany. The development of wind power generates 3 gigawatts or a total of 10% of overall electricity produced by the UK. Increase in the cost of electricity consumed in terms of living standards does not exceed 2, 5%, which is largely due to wind technologies being introduced into the national electricity industry. It is also worth noting that wind energy delivery during high energy demand spell is 2, 5 times as much as it is

during low demand periods. Experts report high and low wind energy conditions to be of little duration and mediocre impact on wind energy generation, which allows production to be under way year-round without a significant breach of continuity (Sinden, 2005).

Herzog, Lipman, and Kammen (n. d., p. 32) claim that Denmark is regarded as the world's biggest producer and exporter of wind turbines, with 60% of facilities manufactured. The objective of Denmark was to produce 10% of national electricity around 2010 while the production of as much as 50% of electricity is penciled in for 2030 and is yet to come. The so-called 4000 megawatts offshore wind initiative will be instrumental in the fivefold increase of energy generation. The government of Denmark is a well-documented strong advocate of wind industry as that of Germany is.

Windmill Law required that electric enterprises buy output from private wind turbines at estimated 85% of consumer price of electricity as well as giving an eco-tax break. Equipment ownership promoted by state policies has caused private entrepreneurs to hold 80% of wind energy market. On top of that, electric utilities were granted 1, 5 US cents/kWh production dotation, which enabled industry stimulation (Herzog, Lipman, and Kammen, n. d., pp. 32).

According to Herzog, Lipman, and Kammen (n. d., pp. 32-33), as far as Spanish wind energy production is concerned, strong stimuli for wind developers in conjunction with regional incentives aimed at stimulating investment in facilities manufacturing are contributing greatly to the acceleration of wind energy production capacity. Banks' willingness to lend financial support to wind projects is also strong enough. Spain guarantees

payment to wind producers as Germany and Denmark do. With payment amounting to 80 to 90% of the retail rate and other state initiatives being highly-efficient, Spain is one of the countries to show a stable growth in the green energy production.

## **Conclusions**

Wind energy is one of the leading trends in most European countries as pollutants-free renewable type of green energy. Germany, Spain, the United Kingdom, and Denmark are among world leaders in wind energy production. Governmental support, efficient legislative policies, banks support, and wind producers financial stimulation are instrumental in helping wind energy add to its already amazing production capacities. These European countries are likely to produce nearly half the current level of electricity consumed internally. Though price for facilities construction may be palpable, the outcome is worth investing. Since wind energy does not cost that much, technologies evolution reduces installation price, and governmental tax incentives promote this green source of energy, wind-related electricity production is an exciting prospect at this juncture when pollution-induced global warming, ozone depletion, and sources reduction call for the problem of alternative energy sources to be put pointblank.

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