Wind Energy

With a major possible energy crisis on the horizon, the United States has been looking for some different options of where to go for renewable energy. Natural resources are running out and our planet is being polluted with tons of hazardous waste. In 1997, 160 nations at the United Nations framework committee meeting came to the conclusion that we must all limit the emissions of greenhouse gasses put out by many energy sources (2, Enron). With dilemmas like this on their hands, it is no wonder that we have invested time, money, and research into the development and advances in wind energy.

Wind energy is a clean, pollution-less alternative of creating and harnassing energy. This process first begins when large things called wind turbines are constructed in wide open areas that will get a steady wind flow. These turbines take the kinetic energy from the winds and turn it into mechanical energy that can be harnassed for every day use. (3, Ter.Res.In)

The United States has already invested lots of time and efforts into the growth of wind energy and will continue to do so. Realistically though, all energy cannot be created this way. The Battelle Pacific Northwest Laboratory estimated that around 20% of the nations electricity could be created this way. Striving for a radical change like this, 2020 is the year that the U.S Department of Energy has made the goal for reaching 5% of the United States’ Energy use to come from wind. (4, Awea)
The amount of electricity generated by something is measured in a small unit called a watt. When talking about the amount of electricity something as huge as a wind turbine can generate, the most often used terminology is kilowatt (1,000 W) and megawatt (1,000,000 W). The turbines that are being developed today have a wide range of effectiveness. The smaller turbines, like a 10-KW design, can easily power a typical household, while one that is 1.8 MW could power more than 500 households. The amount of energy that can come from a certain turbine really just depends on how large it is & what the speed of the wind is that is going through it. (4, Awea)

Wind Energy turbines cannot be placed just anywhere. Turbines must be placed in areas where there is constant wind flow, stable weather conditions, and close transmission lines. Also, these turbines take up quite a bit of space. Every turbine requires around 2 acres of land. This might not seem very high, but when a wind energy plant consisting of many different turbines is planned for an area, it will take up hundreds of acres of land. The best areas for wind energy plants and turbines is areas of high altitude, where wind breaks do not occur. (1, Brown, Lester R.)

The state in America which has seen the most wind energy development is the Golden State; California. In 2001, one thousand six hundred and seventy one MW of energy came from the wind energy plants in California alone. But of course, actual production and performance is a completely different subject than potential. The Pacific Northwest Laboratory ranked California as 17th in the states with the highest wind energy potentials. The top 5 states were North Dakota, Texas, Kansas, South Dakota & Kansas. This must just mean that California is getting a head start & that the other states just
aren’t realizing their potential as well as wasting ample open space and constant winds. (4,Awea)

Looking at wind energy globally, Germany leads the world in wind energy generated. In 2002 alone, they were able to produce more than 12,000 megawatts of wind power (1,Brown, Lester R.). It is very interesting too, to look at small countries such as Denmark, that have made a full shift towards wind energy as a respected source of electricity. Today 18% of Denmark’s energy is created by wind turbines. An even stronger number comes from Northern Germany; Schleswig-Holstein to be exact; where a strong 28% is created this way. (3,Ter.Res.In)

One of the major obstacles that will be hardest in transforming the United States into a large community more reliant on wind energy is money. Of course in the long run, wind energy will very much make the money back that is invested in it, but the hard part is just getting the funding for it up front. It is not cheap to create these wind farms, but the rate of expense that wind energy costs has gone down about 80% since the 1980’s when it was first being developed. (4,Awea)

But even when all of the money for funding is accounted for and the United States is ready to make a major shift in energy sources, there is still another very major improvement we must make.

About one third of the nations electrical transmission lines will need to be heavily improved. To develop a strong system of wind energy, high voltage transmission lines will need to be developed in order to get energy from the wind energy plants and turbines to where it will be stored (4,Awea). This process will be quite expensive for the U.S, but
if it is handled in steps over a longer period of time, it is completely manageable & would secure for us a great advancement in a strong alternative form of energy production.

And just like almost everything, wind energy does have some environmental effects (which actually pale in comparison to say- oil). Flying animals like birds and bats can be harmed by anything with a moving propeller like form, so it is only fair to consider the harm done on the flying wild life around the areas that wind turbines are being developed. Studies, though, have shown that deaths upon these animals caused by wind turbins are considerably low, less than 1%, compared to other major causes like hunting, buildings, auto-accidents, and cats. (4,Awea)

People living next to some wind farms have complained about the visual threat that these turbines have caused on the overall appearance and beauty of their community. To better work with these people, wind farms are now more carefully designed. These concerns are usually silenced when a wind farm is developed with a uniform- like same height turbines in large quantities that are more out of view. The ability to work with the concerns from the community while producing this alternative energy source shows in their approval rating, with more support than opposition in many public opinion polls. (4,Awea)

Noise coming from these turbines was another threat to the community in the early stages of development, but the increase in thickness of the blade as well as other more advanced improvements in their turbines has reduced that by a large amount. No longer is their very loud noises to surrounding communities, just at most a humming sound that could be heard from your kitchen on any given day.
Through all of this information, it is safe to say that when developed and used properly, wind energy is a very viable, strong source of energy, and I do not believe we have seen the most of it yet. With the increase and advancement of wind turbines and the funding towards it, I am very anxious to see the increase in energy coming from them. Hopefully, the United States will realize the potential that many of their individual states have and develop more plants in these higher altitude, open areas.

But, because it is seen that wind energy can only supply (at best) 20% of the nations electricity, it is understandable why that nation could be spending time and money on the advancement of other alternative energy sources with a higher percentage of output.

I personally think that wind energy can work hand in hand with these other energy sources in creating a much cleaner renewable energy system for the world. Examining all of the pros and the cons of the development in wind energy, it looks as though the positives heavily outweigh the negatives, and we are looking at a strong future if we continue the advancement of wind energy as planned.
Works Cited


