

Wind Power as a Renewable Resource



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The introduction of steam power and fossil fuels in the late 18th century sparked the Industrial Revolution, which ~~forever changed and~~ vastly improved global commerce, production and transportation. Although considered a very beneficial and monumental event, the Industrial Revolution ~~also~~ brought with it some very serious repercussions ~~to~~ for the global community. In particular, global warming and ~~a~~ dwindling ~~supply~~ supplies of fossil fuels are two major concerns among many nations today (Manwell, McGowan & Rogers, 2002). Numerous scientists, inventors, and industrial visionaries ~~have been~~ are hard at work exploring the advantages of renewable energy in response to these ominous dilemmas. Although not ~~perfect~~ without its limitations, the resurgence of wind power ~~has been~~ is enjoying relative success and may ~~one day eventually~~ prove itself ~~to be a viable~~ sustainable and efficient renewable resource for future generations.

Commented [RR1]: Passive voice.

Commented [RR2]: No need to include "sustainable" and "renewable" in the same sentence. In this instance, they are redundant terms.

Innovation and Benefits

~~While some of the current wind power~~ methods ~~currently utilized to harness the power of the wind~~ employ cutting edge technology, ~~but~~ the idea of using air currents as an energy source is hardly ~~a new one~~. ~~Still in use today, w~~ Windmills were ~~originally utilized~~ invented over thousands of years ago and used to perform for important tasks such as refining grain, cutting wood, and pumping water. ~~Additionally, w~~ Wind power was additionally responsible for driving drove gaff-rigged galleons around the world during the ~~a~~ Age of ~~e~~ Exploration. ~~Although still in~~ limited use today, windmills and sailing ships have drastically declined in popularity since the advents of fossil fuels and steam power in the early 19th century (Deal, 2010).

Commented [RR3]: This sentence is in the passive voice, BUT it works. Limited passive voice is acceptable. Excessive passive voice will bore your audience.

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Today's market for wind power is more concerned with exploring renewable energy applications rather than simply producing windmills and sailboats. According to Walter F. Deal, a mechanical engineer, educator, and author of the point paper *Wind Power: An Emerging Energy Resource*, "Today, Today there is a renewed interest in continuing to develop and build wind farms and other alternative energy resources" (2010, p. 12).

Although more complex ~~in nature~~ than windmills, contemporary wind turbines operate on relatively similar principles. ~~Essentially,~~ Large blades are essentially situated around a prop ~~are~~ mounted to a fixed horizontal shaft that is placed on a stationary platform several hundred feet in the air. Strong wind currents rotate ~~This large "fan,"~~ is then rotated by strong wind currents and which spins a low speed shaft. Through reduction gearing, the low speed shaft ~~then~~ turns a high speed high-speed shaft. ~~The~~ is mechanical energy is ~~then~~ converted into electricity and that is either stored in a capacitor or routed to a power grid through a transformer. The primary difference between modern wind turbines and traditional windmills is that ~~modern turbines~~ the former are concerned with producing electrical energy while ~~windmills~~ the latter are designed to produce mechanical energy (Manwell, McGowan & Rogers, 2002).

~~Obviously,~~ The primary benefits of using wind power as a renewable resource ~~are~~ is the near infinite nature of ~~the resource and~~ wind currents and their minimalistic impact ~~the process~~ has on the environment. Excluding the consumption of materials used in the production and maintenance of wind turbines, these machines have ~~almost no direct~~ very little impact on surrounding ecosystems and do not produce harmful byproducts or pollutants. ~~Additionally,~~ Provided the earth continues to spin around its axis and the sun continues to shine, wind will continue to blow until the end of time. Finally, wind turbines may be installed in very austere areas. This flexibility can provide people living in remote locations with much needed power

production that would otherwise be unavailable through conventional means (Culley, Weaver, Ogley-Oliver & Street, 2011).

Limitations and Inefficiency

Although wind power may seem like the perfect solution to the woes of an emerging environmental and economical energy crisis, renewable energies are not without their limitations and mechanical inefficiencies. Specifically, there are growing concerns over impacts on avian populations that live or migrate near many wind farms (Manwell, McGowan & Rogers, 2002).

Additionally, there are many social and cultural considerations that ~~must be given due consideration before simply prohibit~~ filling surrounding landscapes with wind farms full of high-tech turbines (Pasqualetti, 2011).

While less intrusive and damaging to the environment than traditional fossil fuels, harnessing the wind for energy production is not a completely faultless process. Modern turbines produce a large amount of stray electromagnetic radiation and unwanted noise.

~~However, t~~The largest growing concern is the impact wind farms have ~~been having~~ on bird populations. Many endangered species are being killed as a result of impacts with turbine blades ~~when as~~ the birds attempt to pass through wind farms. ~~Additionally, m~~Many migratory species of birds ~~have additionally suffered a~~ disruptions in their travel patterns due to the location of several wind farms, both in the United States and abroad (Manwell, McGowan & Rogers, 2002).

Due to the tremendous volume and speed of wind required to produce a sufficient ~~(and cost-effective)~~ amount of electricity, many wind farms are set in predetermined locations ~~that~~ take advantage of prevailing winds in the most efficient and economical manner possible.

Establishing and maintaining wind farms is an incredibly expensive process. ~~Thus, and, not surprisingly,~~ many communities simply do not want large, loud wind turbines placed in their “backyards,” no matter how beneficial the technology may prove ~~to be~~. Dr. Martin J. Pasqualetti (2014), Senior Sustainability Scientist for the Global Institute of Sustainability offers, “The ultimate scale of development will rely on several factors other than raw wind strength and consistency. Much will depend on siting choices and cooperation between developers and local residents” (2011, p. 214).

Argument and Conclusion

At first glance, it ~~would appear~~ that favoring wind as a renewable energy resource makes absolute sense and requires no further deliberation. Performing a limited amount of research, ~~however, though~~ quickly reveals the fact that wind power (much like many other “alternative” energy sources) is a highly debatable topic. ~~Depending on which side of the issue one sits, an a~~ Arguments could be made ~~for or in favor of or~~ against the implementation and proliferation of wind farms across the globe.

Personally, I feel the current economical shortfalls and ~~high cost-effectiveness~~ of wind turbines outweigh their ~~environmental~~ benefits. ~~Such inequalities fail~~ to justify the wide spread application of the technology in today’s socioeconomic environment. ~~However, o~~ Over time, ~~however, I believe~~ wind power will ~~make~~ gradually ~~improvements~~ and become ~~an even more efficient and cheaper viable~~ alternative to traditional fossil fuels. The shift to renewable

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energies, as our country's primary source of power generation, must be made in order to ensure our competitiveness as a world leader on the global market. The other industrial nations of the world must also ~~face this inevitability~~ address this issue if we ~~want~~ to preserve the earth's fragile ecosystems and the life that flourishes within them.

References

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