The benefits of renewable energy for the environment and nature

Science, Physics

Our country is currently suffering energy-wise, we have been powering with inefficient sources for years now and the harm that it is doing to the country has started to become apparent. Renewable energy is the only way to stop, or at the very least set back the inevitable downfall of our ecosystem. I think that the next big breakthrough for renewable energy is implementing off-grid communities that use renewable sources as their main sources of power, so that we can potentially escape the energy rut that we got ourselves stuck in.

America is wasting their finite resource, such as coal and nuclear when we could actually be using renewable sources that will never run out. Most of our country's citizens have never thought about where their energy comes from or they do not even care. Having the knowledge of what resources powers our country should be a higher concern four or government. This study by the U. S. Energy Information Administration explains what our main energy resources are and how much we typically generate from them, in 2015, the United States generated about 4 trillion kilowatt hours of electricity. About 67% of the electricity generated was from fossil fuels (coal, natural gas, and petroleum) (" What is U. S. electricity"). Currently there are hardly any renewable sources in use that are helping to power the country, which will surprise some considering it seems as if there are solar panels everywhere.

It is a widely accepted fact that renewable energy would be highly beneficial to our country and it will increase the general well being of those living in our country. Instilling this new way of energy usage into off-grid communities will inevitably increase the state of living for those in cities and other well

populated areas. The change to renewable energy sources could drastically lower the pollutants currently being dispersed into the atmosphere by coal mines and other harmful power options,

increasing the supply of renewable energy would allow us to replace carbon-intensive energy sources and significantly reduce U. S. global warming emissions... a 25 percent by 2025 national renewable electricity standard would lower power plant CO2 emissions 277 million metric tons annually by 2025—the equivalent of the annual output from 70 typical (600 MW) new coal plants (“ Benefits of Renewable Energy Use”).

Another positive result from switching to renewable energy sources is that greenhouse gasses would inevitably decrease, thus improving the overall air quality. Electricity production accounts for more than one-third of U. S. global warming emissions, with the majority generated by coal-fired power plants... In contrast, most renewable energy sources produce little to no global warming emissions (“ Benefits of Renewable Energy Use”). Coal mining and lumber harvesting would also be reduced by the switch, which in turn would improve the forest and ecosystem surrounding these power plants. Animals will also benefit from the change to clean energy. It is often reported that animals are constantly displaced and injured by the different forms of energy we are using currently. Andrew B. Gill preformed a study and wrote a journal article on the conservation of wildlife and their habitats; the results of his study were conclusive that something needs to be done to change the current state of our energy resources.

A variety of terrestrial land uses and near-shore activities have led to local habitat loss and disturbance, changes to nutrient status and cycling, loss of food supplies, erosion, reduced sediment supply, changes in the level of sea inundation and increased exposure to natural disturbances (606).

In addition to the benefits towards nature the switch over to renewable would also create jobs. There would be many different forms of employment, because some would need to oversee and work on the assortment of machines, some would assemble and set up the machines, and there would be more jobs at the energy storage facilities. The benefits from switching to renewables are countless compared to all of the destruction and devastation that non-renewable energy is doing to our country. It is also affecting those whom live and work in and around the mines, according to a study performed by Harvard.

Studies in New England find that, although populations within a 30-mile radius of coal-fired power plants make up a small contribution to aggregate respiratory illness, on a per capita basis, the impacts on those nearby populations are two to five times greater than those living at a distance... The direct health impacts of SO2 include respiratory illnesses... plus heart arrhythmias, LBW, and increased risk of infant death (Epstein, Buonocore, Eckerle, Hendryx, Stout, Heinberg, Clapp, May, Reinhart, Ahern, Doshi, Glustrom 85).

The jobs created by the new renewable structures will provide safer working environments for the workers who had previously been working at more

dangerous and toxic job sites. Jobs will be lost when the current energy sources are shut down. The closing of power plants is inevitable with the switch towards having clean energy communities, therefore displacing thousands of workers who would hopefully be able to find a new job with the new energy systems.

Shifting towards a future of off-grid communities that are powered by renewable energy sources is also profitable in the sense that non-renewable sources are finite, hence the term non-renewable. It is inevitable that the coal, wood, nuclear, etc. resources will all eventually run out whereas renewable energy is infinite. Some might not realize that our current energy systems do have limitations, because there is no way to produce sources, such as uranium and coal. Sunlight, wind, and water will always be present and there are no limitations on those resources. Renewable options are boundless with their resources.

Even though the pros towards shifting to a renewable energy future outweigh the cons there are still a few issues with the change. Wildlife would be affected, although not to the extent that our current methods are doing towards our ecosystem.

Despite the benefits of hydroelectric power, the plants cause major environmental problems. The impounded water frequently covers valuable, agriculturally productive, alluvial bottomland. Furthermore, dams alter the existing plants, animals, and microbes in the ecosystem. Fish species may significantly decline in river systems because of these numerous ecological

changes. Within the reservoirs, fluctuations of water levels alter shorelines, cause downstream erosion, change physiochemical factors such as water temperature and chemicals, and affect aquatic communities. Sediments build up behind the dams, reducing their effectiveness and creating another major environmental problem (Pimentel, Herz, Glickstein, Zimmerman, Allen, Becker, Evans, Hussain, Sarsfeld, Grosfeld, Seidel).

Sea creatures would be the biggest group of creatures affected, because of the wind and water turbines that would be off the coast for some of the communities. The construction of the turbines damages the sea life around the areas and the underwater turbines are cause for different creatures to swim through them which may potentially damage the animals or kill them. In addition to sea life the animals on the land will also be affected by energy sources such as solar and wind power. Mass amounts of land would be required to house the amount of solar panels needed to power a community if there was no other energy option to help support the demand for energy from the solar farm. With the amount of land being used an assortment of small animals might be displaced because of the panels being set above their burrows or other types of nests.

The construction and eventual decommissioning of solar energy facilities will have impacts on wildlife, including rare and endangered species, and on their habitats in the desert. These activities involve significant ground disturbance and direct (e. g., mortality) and indirect (e. g., habitat loss, degradation, modification) impacts on wildlife and their habitat. Solar energy facilities require large land areas to harness sunlight and convert it to

electrical energy. According to Wilshire and colleagues (2008), photovoltaic panels with a 10% conversion efficiency would need to cover an area of about 32, 000 square kilometers, or an area a little smaller than the state of Maryland, to meet the current electricity demands of the United States. Many of the areas being considered for the development of solar energy in the Mojave and Sonoran Deserts are, at present, relatively undisturbed (Pimentel, Herz, Glickstein, Zimmerman, Allen, Becker, Evans, Hussain, Sarsfeld, Grosfeld, Seidel).

Space is one of the main issues with the switch to renewable energy powers off-grid communities, but it is not a big enough deterrent to derail the progressive ideas that are the off-grid communities.