

An Essay on the Climate Crisis and Potential Mitigating Techniques

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Ever since I was a small kid, I knew how beautiful this world around us was. I remember all the way back when I first learned about how plants grew and about all the diverse life on our planet. Bill Nye, an inspiration of mine in my youth, once said back in 2017, "We have hardly done anything to address climate change or improve the lives of people in the developing world; we have to get to work." [1]. He could not be more right. Currently, Earth is truly facing a crisis and all forms of life are affected by it. The amount of greenhouse gases in our atmosphere has been steadily rising since the Industrial Revolution. Carbon dioxide makes up about two-thirds of greenhouse gases and is largely the product of burning fossil fuels. Methane, the main component of natural gas, is responsible for more than a quarter of the actual global warming we are experiencing today. Global warming triggers extreme weather events. These events include heatwaves, droughts, hurricanes, wildfires, and even winter storms. [2]

Being one of those people that joined the engineering field to "get to work" on reversing this climate crisis has made me very passionate about exploring the various ways that alternative energy can be incorporated into daily life for many different processes and applications, hence my concentration in alternative energy and soon-to-be minor in sustainability if I get approved for it next fall. I've seriously considered creating a business one day to act somewhat as a "sustainability consultation business" where people and businesses ask, "How do I make this more sustainable?", and I can hopefully step in to help them. This essay will explore various types of technologies that could potentially mitigate current greenhouse gas outputs as well as investigate current alternative energy technologies out there and ideas I've personally come up with.

Some mitigation techniques that could be used in the removal of greenhouse gases are deploying various gas capture technologies. While some industries, such as the chemical processing industry or the automotive industry, already utilize these to capture carbon dioxide, more could be done to expand the carbon capture infrastructure. At one point I even thought, "What if we put carbon capturing technology on a car? As it drives through the city it picks up carbon dioxide like a vacuum.". Of course, that comes with many challenges as well such as having enough power to operate both the vehicle and the carbon capture, adding extra weight, and creating the need to dispose of the carbon dioxide captured. The other problematic gas that would need collecting is methane. There is usually little to no talk about methane capture because most people jump to assuming carbon dioxide is the only gas we should worry about. Currently, the biggest contributors to methane emissions are oil and gas systems, livestock enteric fermentation, and landfills. [3] Although some industrial processes do capture methane byproducts, not much is done about the methane produced in landfills. Other than putting a big tent over a landfill with a vacuum attached, I do not believe there is a readily available solution to capture methane emitted in landfills.

The name “alternative” energy came about due to these energy sources being alternatives for current combusted fossil fuel sources. Although wind and hydropower have been around for centuries, recent advances in technology have made way for humanity to harness solar power. Over recent decades, alternative energy has come with many challenges such as cost and location. Fuel cell technology for example is hard to incorporate into many vehicles because there are simply not enough locations in the country yet to supply the hydrogen for that many vehicles. If the world relied a little less on money, many of these energy goals would be very achievable. Hopefully one day the generosity people have for their fellow humans will outweigh the greed of trying to line individuals’ pockets.

One alternative energy source I believe has much potential is a series of sidewalks or walkways that once walked over, generate electricity through pistons under the surface. As a person walks across certain segments, they drive the pistons and generate electricity. This however comes with disadvantages such as causing the human body to do extra work. This can fatigue workers much quicker if it were utilized in various walkways within a plant for example. A public segment of sidewalk could make use of this technology, however. Another problem would be trying to keep the mechanisms under the sidewalk free of debris as this can damage the inner workings.

Another idea I’ve had was converting the coal powerplant from my hometown of Bay City, Michigan into an alternative energy source. Honestly, I’m not sure how it would be done but I’ve imagined shutting down the coal burning operation entirely and replacing it with other sources. For example, since this powerplant is literally right on the lake, hydropower could be incorporated into the grid. I’ve pictured the hydropower helping provide enough electricity to perform hydrolysis on the water itself to create fuel for potentially many fuel cell stacks. Wind power can also be incorporated into that design.

Growing up, I loved being outside in the sunshine and enjoying the fresh air and as I’ve seen this climate crisis unfold, I’m worried many future generations will only hear stories about beautiful, clear skies and moderate temperature days. They may only experience drastic weather shifts and not be able to breathe the air outside which is so frustrating. This planet has so much beauty to offer but we as humanity need to see how we are destroying our only home. There is no second planet for a do-over. Now is the time we must step up as a society to do what’s right by us and future generations. Whenever I’m driving and pass through a large wind turbine farm or a solar farm, I remember that some of are still trying our best to preserve and heal Earth and it continues to motivate me towards being someone who is ready to stick up for not only our planet, but the people I will be handing it off to once my time is up.

References:

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