

The Bright Future of Nuclear Power

The earth is changing, and not in a desirable way. Over the past two centuries, global temperatures have risen by around two degrees Fahrenheit. This may not sound like a big change, but it has had several negative impacts on our planet such as rising sea levels, and more intense storms. While this may not be as evident where we live in the contiguous United States, it is a lot more apparent in other places such as Puerto Rico. According to the US Environmental Protection Agency, the increasing temperatures have caused several problems in Puerto Rico such as the sea rising about an inch every 15 years, heavy rainstorms becoming more severe, increased storm damages, and the increased frequency of unpleasantly hot days.¹ This has caused damage to infrastructure such as roads and bridges, costing lots of money to repair. Some of the roads are not even able to be restored because the ocean has swallowed them up completely. Not only is this happening in Puerto Rico, but according to Business insider, 60,000 miles of US roads could be under water in a few decades.² Coastal homes in Puerto Rico are more likely to be flooded because of the increased storm damages and more severe rainstorms, which leads to higher flood insurance costs. The higher temperatures increase the risk of heat stroke and dehydration, and they negatively affect the people's cardiovascular and nervous systems. The warm nights are also dangerous because they prevent the human body from the cooling that it needs. These problems not only affect Puerto Rico, but they affect many other countries around the world. These issues continue to aggravate our planet each year, and right now it does not look like this trend will reverse in the future.

Why is this happening? The main reason is because of the massive amounts of gasses that have been emitted into the atmosphere in the last century and a half. These gases are a waste product of the industrial revolution, and they are known as greenhouse gases. Just like in a greenhouse, these gases trap heat from the sun when they enter the atmosphere, effectively increasing the earth's temperature. Greenhouse gases are necessary for life to exist on earth, because if we did not have any, the average global temperature would be -20 degrees Celsius (-4 degrees Fahrenheit)³. However, when there are too many greenhouse gases like there are now, the earth becomes too warm. This is known as Global Warming, and it is the reason why places like Puerto Rico have been experiencing all of these problems.

People who do not think this is as big of a problem say that there have been several cycles of warming and cooling throughout earth's history, and that we are just entering another warming period. While it is true that there have been several highs and lows in temperature in earth's history, the warming that is happening now is occurring at a faster rate than ever recorded before. According to NASA, "the current warming trend is different because it is clearly the result of human activities since the mid-1800s, and is proceeding at a rate not seen over many recent millennia."⁴ The earth's average temperature has increased by roughly two degrees Fahrenheit since the pre-industrial era. While this might seem like a small change, it means there has been a

¹ United States Environmental Protection Agency, "What Climate Change Means for Puerto Rico"

² Business Insider, "60,000 miles of US roads could be under water in a few decades. Here's how experts say we can save our critical infrastructure."

³ British Geological Survey, "The Greenhouse Effect"

⁴ Nasa, "How do we know Climate Change is Real"

significant increase in accumulated heat because it takes a massive amount of added heat energy to raise Earth's average yearly surface temperature even by a small amount.⁵

Unfortunately, it does not look like this trend will stop anytime in the near future with the way the world is currently. The main sources of greenhouse gases in the United States are from burning fossil fuels for necessities such as electricity, heat, and transportation.⁶ Our country heavily relies on fossil fuels such as natural gas, oil, and coal. Likewise, many industries rely on these sources and continue to emit large amounts. But there are other existing energy sources that have little to no carbon footprint, such as nuclear power. Nuclear power has been used for several decades to provide energy to the United States and other countries. Nuclear power is generally less expensive to operate than other sources, and it is much better for the environment. According to ACS Publications, nuclear power has prevented an average of 1.84 million air pollution-related deaths in the world as well as 64 gigatons of greenhouse gas emissions that would have resulted from fossil fuel burning.⁷ These are large numbers, and they show that switching to nuclear power would positively impact the world. Apart from being environmentally friendly, nuclear power is also very reliable and efficient, even more so than fossil fuels. According to the Department of Energy, nuclear energy has a capacity factor of 92.5%, which means that means that nuclear power plants are producing maximum power more than 92% of the time during the year. Nuclear power has the highest capacity factor of any other energy source: even natural gas, which has a capacity factor of only 56.6%.⁸ Because of this, nuclear power is not only the energy that we should choose if we care about our planet, but it is also the smartest and most efficient choice of energy.

Critics of Nuclear Energy will say that it is dangerous and that it also negatively affects the environment. While it is true that there have been nuclear accidents in the past, there have only been two major leaks over the six decades that nuclear power has been used. This shows that nuclear power is a safe means of generating electricity and that the risk of accidents in nuclear power plants is low and declining.⁹ Nuclear power is far more efficient at producing energy than fossil fuels because of its high energy density, and it is cheaper to operate. It is estimated that fossil fuels will at most last the world until 2090,¹⁰ but with nuclear power it is estimated that the world can be sustained past 2114 just by using Uranium.¹¹ With new types of energy-creating reactions that are being discovered, that estimated year will continue to get pushed farther back. In addition, if scientists are able to figure out how to turn nuclear fusion into a reality, our planet would theoretically never run out of electricity ever again.

The problem of global warming and limited energy continues to affect our planet, and the solution to this problem is clear. Nuclear energy is far more sustainable than any other energy source. Its possibilities are endless, and it has the power to reverse climate change. Because of this, America needs to set an example for the rest of world and start switching to majority nuclear power. A future run by nuclear power is a bright future for the environment. The charts of greenhouse gas emissions will show a pattern of decline, and eventually the scars on this world from the industrial

⁵ Climate.gov, "Climate Change: Global Temperature"

⁶ Environmental Protection Agency, "Sources of Greenhouse Gas Emissions"

⁷ ACS Publications, "Prevented Mortality and Greenhouse Gas Emissions from Historical and Projected Nuclear Power"

⁸ Office of Nuclear Energy, "Nuclear Power is the Most Reliable Energy Source and It's Not Even Close"

⁹ World Nuclear Association, "Safety of Nuclear Power Reactors"

¹⁰ MAHB, "When Fossil Fuels Run Out, What Then?"

¹¹ World Nuclear Association, "Supply of Uranium"

revolution will start to heal. The sea levels will start to lower, and world temperatures will begin decreasing. Storms will lessen in severity, and flooding will become less of an issue. Places like Puerto Rico will start to see signs of relief from the effects of global warming, and they will be able to start repairing the damage from it. We have the power to choose this future, and we need to choose it now.

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