

The Contributions of Nuclear Energy to the Betterment of Earth

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“Eighteen of the 19 warmest years on record occurred since 2001...carbon dioxide levels are at their highest in 650,000 years...sea levels are rising 3.2mm per year” (NASA-Global Climate Change 2019). These statistics offer a glimpse into the ominous and concerning consequences of global warming. They drive people to wonder about the next few years. Will energy consumption continue to grow? Will humans’ carbon footprint grow even larger? Will humans destroy Earth in their quest to produce more? These ominous questions can be answered by raising awareness about the issue of global warming and dedicating resources to the discovery and implementation of sustainable means of energy production. Examples of sustainable energy include solar power, wind power, geothermal power, tidal power, and nuclear power. As stewards of Earth, it is the people’s duty to preserve the planet—not only for humans but for all organisms that inhabit it. The use of nuclear power as a sustainable energy source is advantageous because it reduces the carbon footprint of the world and fulfills the energy consumption need of people; on the other hand, disasters such as Chernobyl and the economic cost of nuclear power plants pose obstacles to its implementation.

Sustainability is key to ensuring that Earth remains healthy and prosperous to future generations. The United States Environmental Protection Agency defines sustainability as the process of, “creating and maintaining the conditions under which humans and nature can exist in productive harmony to support present and future generations” (Sustainability, para.1). Similarly, the UN World Commission on Environment and Development states, “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (What is Sustainability, para.1). Both agree that sustainability hinges on the preservation of the environment for future generations. It is this key idea that drives individuals to use sustainable means for energy, rather than rely on fossil fuels

that will run out in the near future. Nuclear power is a sustainable form of energy because uranium and thorium are its primary sources of power. While they are finite elements, their usage is almost exclusively limited to providing nuclear power. A nuclear power plant provides energy using these elements through the chemical process of fission. The heat produced creates steam that spins turbines producing electrical energy in a usable form. This process does not release harmful gases into the air that contribute to air pollution, thus reducing the risk of respiratory complications in humans and other organisms. According to the Organization for Economic Cooperation and Development, “Radioactive waste management, as currently carried out in OECD/NEA countries, is fully consistent with the principles of sustainable development. It allows present generations to progress without leaving burdens for those of the future” (Lang-Lenton León, 2001, p.20). Nuclear waste is handled in a manner that ensures future generations do not suffer the consequences of the usage of nuclear power. Such advantageous traits make nuclear power the ideal sustainable and clean alternative to fossil fuels.

Any alternative to fossil fuels must be economically sustainable for it to be a viable energy source. Human consumption of fossil fuels is high because of the booming population of the world; therefore, it is vital that an alternative energy source is economically feasible for countries around the world. According to the OECD, “Existing nuclear power plants that were built at low original costs, or where the initial costs have been largely amortised, can be very competitive and profitable. They are expected to continue operating well beyond the time required to amortise the investments that were made in them” (Bertel & Morrison, 2001, p.15). This makes nuclear energy an attractive alternative to fossil fuels because it will compensate for the costs of building a nuclear plant. Nuclear power can truly demonstrate a long term,

economical difference if most countries around the globe implement it. This cannot happen if the costs of implementation outweigh the benefits of the process.

The most important aspect of sustainable development is its ability to meet the needs of the human population. Solar and wind power are sustainable sources of energy because the sun and wind cannot be used up by human consumption. As Stieglitz bluntly states in his article, “The wind doesn't blow and the sun doesn't shine all the time” (Stieglitz, 2009, p.16). It is necessary to use nuclear energy to compensate for the gaps in the usage of solar and wind power. Nuclear energy, “does not discount the importance of renewable sources of electricity, which are ideal for low-capacity generation, special applications, and locations where nuclear power is impractical. But in terms of massive baseload capacity, there is a compelling need for nuclear power.” (Stieglitz, 2009, p.16). By using different renewable energy sources together, the world can eliminate its dependence on fossil fuels.

The most often cited criticism of nuclear power is the danger of nuclear meltdowns. The Chernobyl and Fukushima Daiichi nuclear meltdowns were the major accidents that demonstrated the harmful effects of nuclear power. Both were equally devastating and tragic. In Chernobyl's nuclear meltdown, “Two Chernobyl plant workers died on the night of the accident, and a further 28 people died within a few weeks as a result of acute radiation poisoning” (Chernobyl Accident 1986, 2018, para.2). The threat of a nuclear meltdown and its consequences are more severe than threats from other sustainable sources of energy. Another concern is the dangers of natural disasters on nuclear power plants. Another nuclear meltdown occurred, “following a major earthquake, a 15-metre tsunami disabled the power supply and cooling of three Fukushima Daiichi reactors, causing a nuclear accident on 11 March 2011. All three cores largely melted in the first three days” (Fukushima Daiichi accident, 2018, para.1). The threat of

natural disasters is beyond human control. No technological advances and safety procedures can currently stop natural disasters from destroying nuclear plants.

Nuclear energy is not the perfect solution. However, it is a better source of energy than fossil fuels that increase carbon emission and contribute to global warming. Nuclear energy has the potential to meet the needs of the human population and aid in reducing humans' carbon footprint. Without the usage of nuclear energy as a substitute to fossil fuels, humans will never restore the harmony of Earth; nor will they preserve the planet for future generations. Global cooperation on the implementation of sustainable power alternatives is paramount in ensuring the preservation of the planet. Without global cooperation, individual efforts will yield little effect. The world needs major steps forward. Therefore, it is important for countries around the world to cooperate in implementing sustainable reforms to power usage through the construction of nuclear power plants to provide power to all humans, and to ensure that Earth remains a prosperous home for all its inhabitants.

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