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Attempting an In-depth Analysis of Global Warming - Key Influences and their Impact

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Is Global Warming a Hoax?

Introduction

Global warming has been the subject of debate across public and scientific forums, with disparate ideas and conclusions deduced from both communities. The question is whether it is a scientific fact, myth, or hoax. For consistency, global warming is a term used to refer to an increase in the earth's surface, and air temperatures averaged across different places around the globe over a pre-specified period (IPCC, 2018). The different perspectives have created confusion and diluted the concentration of efforts by governments and private organizations. Despite the continued controversy on global warming to be a hoax, it is a scientific fact proved, and human activities have had the most significant impact on the increase in global temperatures over the last 30 years.

Vivid Climate Change in the Recent 30 Years

Climate scientists have confirmed that the earth's climate has changed over its period of existence. Over 650,000 years of earth existence, seven cycles of glacial advances and retreats have been witnessed, with the last one determining the end of the ice age and ushering the modern climate era around 7,000 years (Office of Climate Change, 2018). This period coincided with the beginning of human civilization. For centuries, temperatures and sea levels have been rising, a direct consequence of greenhouse gases building up in the atmosphere (Rosenthal & Revkin, 2007). Climate changes have been credited to orbital variations that affect the solar energy received on earth. The difference in climate is not a new phenomenon in nature freely occurring without human intervention or contribution.

Modern global warming after human civilization is the one that threatens the future generation. In the most recent report by the IPCC (2018), human-induced warming hit the one-degree Celsius mark above recorded pre-industrial levels in 2017, translating to a rise of 0.2o C for each decade. Higher temperatures on the earth's surface have a higher average than on the sea. On global standards, land areas are experiencing higher warming levels than oceans. Based on different datasets, evidence indicates that 20- 40% of the global human population experienced temperatures of at least 1.5o C higher than the pre-industrial levels for at least one season in the 2006-2015 decade (IPCC, 2018). The warmest five years have occurred after 2010, with 2016 the warmest year recorded to date (NASA, n. d.). This shift in temperatures in the past century is the result of an increase in human activities.

Global warming effects are felt beyond the earth's surface. Temperatures in the ocean have also raised, with the top 2,300 feet being 0.4^{o} F compared to temperatures recorded in 1969 (NASA, n. d.). NASA's gravity recovery and climate experiment (GRACE) has also concluded that ice sheets in Greenland and Antarctica have decreased by 286 billion tons and 127 billion tons in ice mass

respectively over the 23 years since 1993 to 2016 (NASA, n. d). Arctic sea ice has also been on the decline for the last few decades, with the sea ice minimum visualized in 2012 the lowest ever recorded (NASA, n. d). Glacial retreat is visible all over the world, with the case of Mount Kilimanjaro an example of the deplorable situation where the snowcap is disappearing when observed from the space. On a global average, sea levels have increased by 8 inches over the last 100 years (Nunez, 2019). However, the century-average rate is skewed by raise observed over the previous 20 years, which are estimated at 16 inches and the sea level increases are accelerating with each preceding year (Nunez, 2019). Emissions of greenhouse gases have also affected the sea, with the acidity of water in the ocean increasing by 30% since the start of the industrial revolution, a process referred to as ocean acidification ("Ocean Acidification," n. d.). Currently, carbon dioxide absorbed by oceans' upper layer is on raise estimated at 2 billion tons annually (NASA, n. d.). Global warming and greenhouse emissions on the earth's surface are causing adverse harm to the climate system, both on the surface and in the ocean.

Global Warming Alters Wildlife

As a result of sea levels rise and oceans becoming warmer, wildlife suffers from more extended, more intense droughts as well as scared freshwater supplies. From polar bears in the Arctic to marine turtles off the coast of Africa, diversity of wildlife on earth is at high risk (World Wildlife Fund, 2019). Unfortunately, it is true that the polar bear standing on a chunk of shrinking ice has become a symbol of the devastating effects of global warming (Talk, 2019). Even small violations in temperature are enough impacts on hundreds of already struggling animals. According to Talk (2019), 80% of 1,500 wildlife species sampled in the experiment Journal Nature conducted are already showing signs of stress from climate change. Since changed ecosystems force animals, which have spent millions of years adapting, to rapidly modify their response to face climate change, they reduce their ability to fulfill the species' needs. Animals have weaker adaptability than people; hence, humankind is responsible for the actions done and their effects on wildlife.

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Continued Controversy on Global Warming to Be a Hoax

Evidence of global warming is unequivocal, but some argue whether the responsibility is solely human-induced or not. Haustein et al. (2017) conducted a study on anthropogenic climate change on temperature by analyzing data on the global warming index between 1950 to 2017. The warming was expressed relative warming on pre-industrial temperatures (1850-1879). There was high confidence that natural contribution in terms of volcanic and solar activities did not have any significant impact on global warming over the past 30 years (Haustein et al., 2017). However, human confidence increased temperatures between 0.4^{o} C and 1.0^{o} C in the same period (figure 1). The combined effect graph on global warming is identical to the human-induced curve; historical data supports conclusions that human-induced factor has contributed to all the combined global warming since 1950.

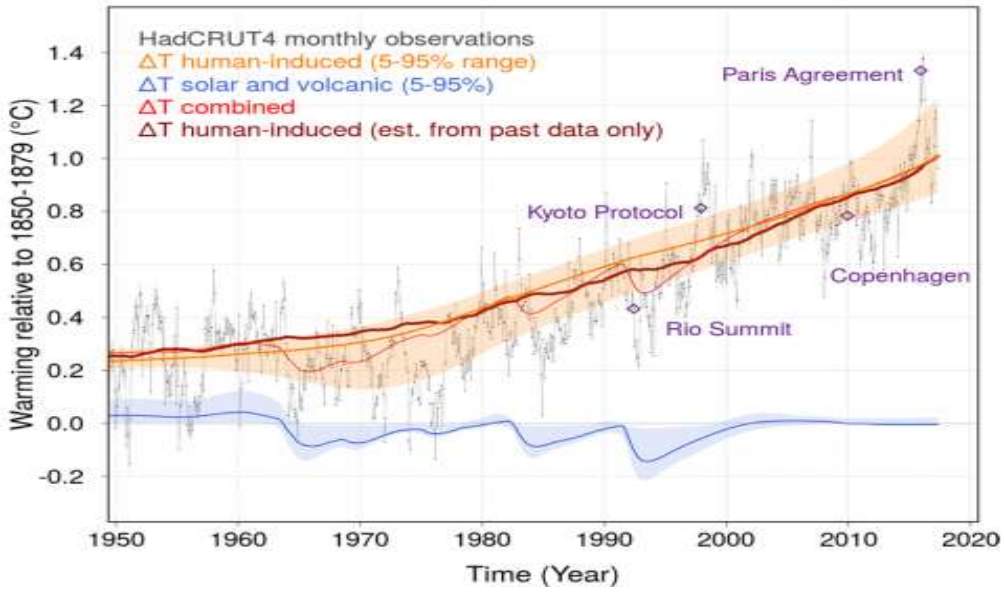

Figure 1. Global warming index 1950-2017

Despite the evidence observed, a section of the global population believes global warming is a fallacy. Climate experts have slowly converged around the fact that climate changes because of human activities, but the public is swayed by industrial and ideological perspectives that deny scientific discourse in proving areas of doubt (Weart, 2011). Impressive public relations efforts have dissuaded the public from reality, promoting the pseudoscientific fraud that accuses actual scientific findings of bias and creates skepticism and resistance. The greatest obstacle that makes the masses reject global warming is that it attacks the very foundation of the natural world and established religious beliefs and industry practices. Such views promote the idea of the climate system as self-regulating, with history proving that the equilibrium in temperature or chemical composition is far beyond what people can influence through any human activities, popularly known as the "balance of nature" (Weart, 2011, p.412). The conflict in science discovery with how people perceive the world creates an automatic reason for rejection of scientific facts.

Information asymmetry is another reason for the continued controversy on global warming. In cases when the masses cannot understand complex ideas, they tend to adopt interpretations of knowledge experts. The majority of people do not understand the process of scientific proof, which makes empirical scientific evidence not as effective in communicating results since it requires expert interpretation. Knowledge experts who have ulterior motives to reject scientific discoveries publish conspiracies in blogs and books that influence masses to reject those discoveries. Large sections of those convinced by intrigues are those of the opinion that markets are regulated and that those who have interests in innovations seek to enhance their positions using science (Lewandowsky, Oberauer, & Gignac, 2013). The science community struggles to establish trust conspirators used to influence the general public to reject scientific discoveries, which dangerously erode factual information and

distort it with fallacies (Douglas & Sutton, 2015). Conspiracies created by experts with vested political and industrial interests have fueled public opinion that global warming remains a hoax.

Effects of Overpopulation on the World

Growth in population has put pressure on scarce natural resources. It is evident from figure 2 that the world population is on an almost perfect growth curve from 1960. Urbanization has created extra demand for houses, cooking, and clothing, which depletes natural resources and increases greenhouse gas emissions (McCarthy, Best, & Betts, 2010). As a consequence, more industries were set up to solve human needs, which meant increased emissions.

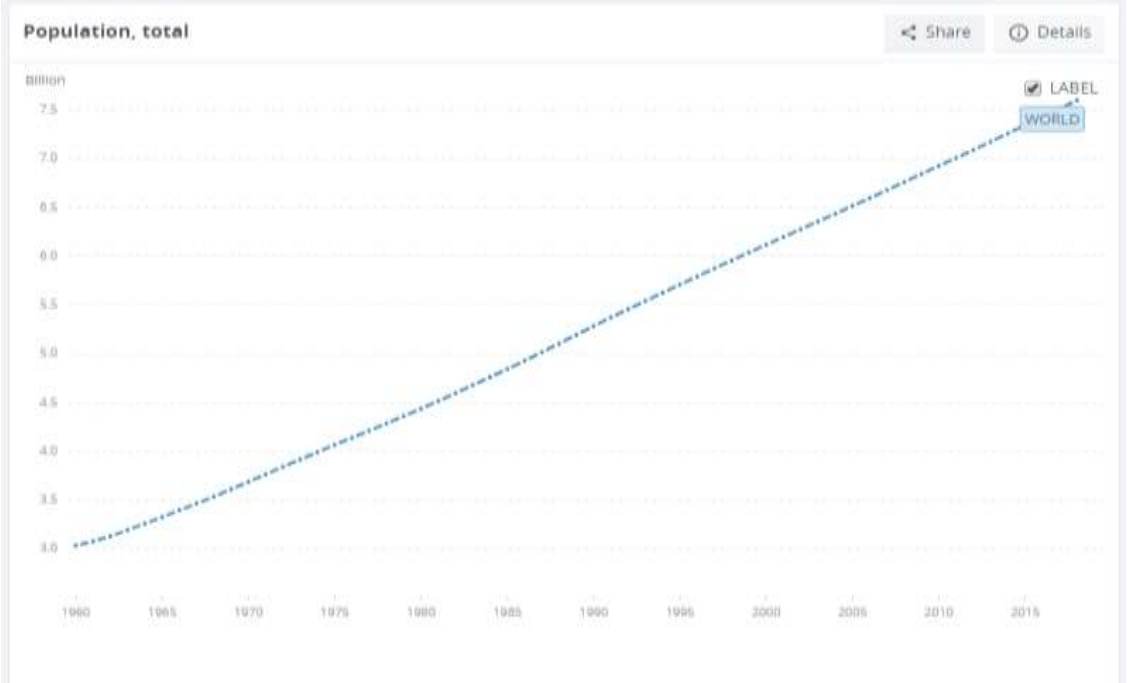

Figure 2. World population growth (World Bank, 2019)

Growth in population has increased the amount of energy used in the world. The energy consumed per capita on average has risen from about 1,200KWh to a record high of 3100Kwh in 2012 (see figure 3). The world still depends on oil as the primary source of fuel, with the per capita oil usage being 1900kgs in 2012 compared to 1350kgs in 1975 (World Bank, 2019). Increased use of fossil fuel is one of the key reasons there have been high volumes of carbon emissions into the

atmosphere (IPCC, 2018). Undoubtedly, the growth in global population continues to exert pressure on non-renewable energy resources.

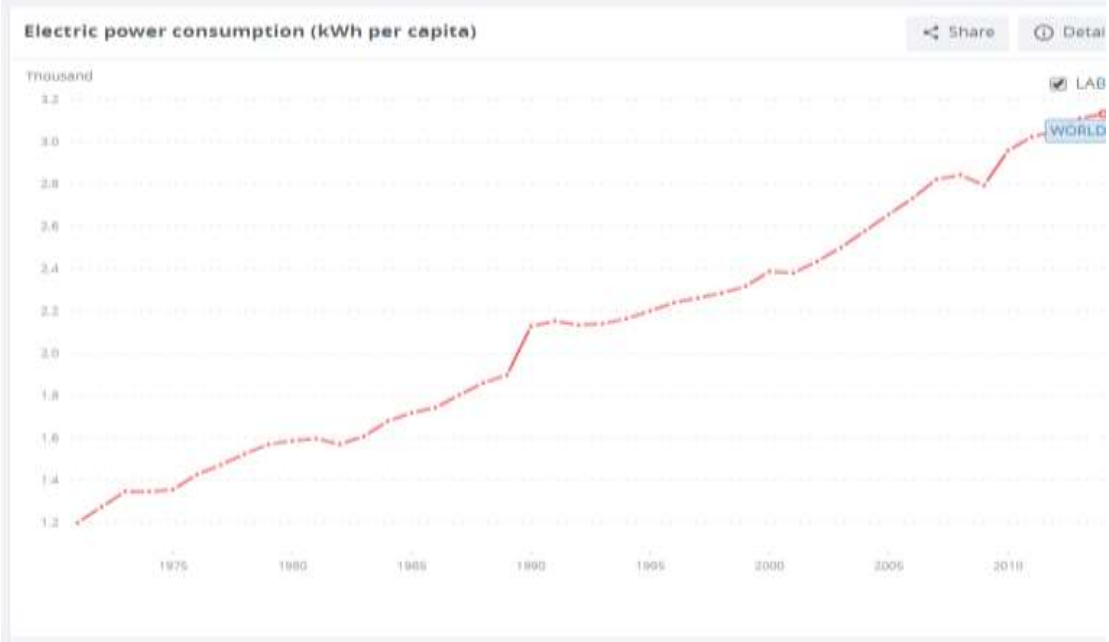

Figure 3. Energy power consumption 1960-2012 (World Bank, 2019).

The Best Ways to Reduce Global Warming

Global warming remains a scientific fact and needs human intervention. Firstly, it can be decreased by addressing the environmental crisis theme areas, namely, rapid population, urbanization, and resulting economic activity (Shu-Yang, Freedman, & Cote, 2004). Secondly, by eliminating or reducing the use of accelerants of environmental depletion, the situation can be improved. Emissions resulting from human activities continue to adversely affect the climate system, with the volume of carbon emissions on a steady rise from 1960 (see figure 4). The most recent year has the highest emission levels, depicting intensified human activities. Mass consumption in the modern world translates into mass dumping of materials, some of which can be recycled or reused instead of being disposed into landfills where they adversely impact the environment (Shu-Yang et al., 2004). Improvement in ecological design through reducing emissions, recycling, and reusing harmful materials can mitigate global warming.

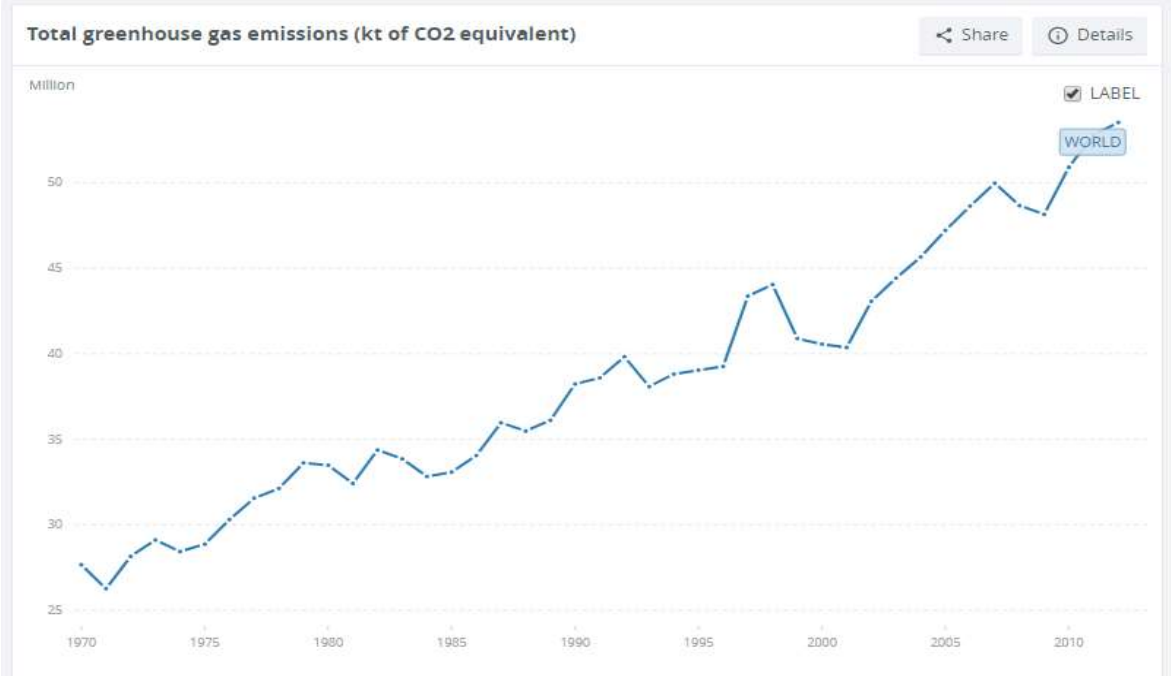

Figure 4. Total greenhouse gas emissions 1960-2012

Reduce-Reuse-Recycle Approach.

- My Contribution to Making the World a Better Place

The alternative and the appropriate method for reducing the amount of waste produced by manufacturing processes which ultimately goes to landfills and affects the environment is the reduce-reuse-recycle approach. These three strategies form the center of what is referred to as the 'waste management hierarchy' (Holt, 2018). Companies reuse and recycle materials to produce new and supply them to the market. I also decided to join the initiative and contribute to making the world a better place. I have adapted my habits to wise consumption. Becoming conscious is not time-consuming in reality; moreover, it even helps me save money and gives me a sense of satisfaction from making environmentally-friendly choices. Individually, I buy products with less packaging and take a reusable bag with me while shopping; reduce electricity use where possible; use less water, for example, when shampooing or scrubbing, I turn off the water; consider alternative transportation such as bike and sort my recyclables. These simple actions are my part in reducing waste, hence decreasing global warming.

The sad reality is that global warming is a scientific fact. Extant data supports the rising temperatures on the surface and in the ocean that coincides with human civilization. Over the last 30 years, global warming is all human-induced. Global temperatures will continue to rise, leading to more adverse climatic patterns and extreme events, such as hurricanes, tornados, earthquakes, and

droughts, if no measures are implemented. Humans must develop effective interventions to arrest the environmental crisis that threatens the future of the planet, such as eliminating or reducing the use of accelerants of environmental depletion as well as adopting a reduce-reuse-recycle approach.

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