Human Beings as the Main Contributors to Climate Change

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Introduction

Climate change describes the global long-term shifting of temperatures and weather patterns. These changes could be either from natural causes, for instance, the sun's activities due to its position from volcanic activities or human activities (United Nations, 2023). Climate change has existed for many centuries without raising significant concerns, as most were due to natural causes. However, since the beginning of the 17th century, considerable climate changes have led to more adverse effects (United Nations, 2023). These significant changes have occurred due to the virtual temperature increase of global warming mainly caused by human activities.

Past and Current Climate Change Arguments

There have been claims that today's global warming has no significant difference from the past. The earth has experienced cycles of ice ages and some warm periods, just like we see today (National Academies, 2019). These past events, however, resulted from natural changes on the earth's surface, such as the earth's orbit going around the sun, the solar activity leading to the shifting amount of the sun's released energy, volcanic eruptions resulting in shading the earth from the rays of the sun, and the varying amount of atmospheric water vapor (Turrentine, 2022). Additionally, movement in tectonic plates also contributed to the changes. While scientists can confirm these claims as accurate, these factors only play a minor part in today's climatic changes. This is because human activities such as burning fossil fuels like coal, oil, and gas are currently the main drivers of climate change.

According to Neaves (2017), the public must consider gravitational shifts as one of the factors attributed to the changing climate. Climate changes interfere with how the earth tilts; if that happens, it could cause further climate changes. When the path of the earth around the sun

changes, the earth follows an elliptical orbit, causing changes in temperatures, especially during the summers and the winters. The sharper the tilt of the earth, the more alteration in the temperatures due to the North and South poles of the earth directly facing the sun's position. Extreme temperatures originate from the positioning of the earth relative to the sun, resulting in seasons changing. Neaves (2017) argues for the natural causes of climate change using tropical storms, saying that the stronger hurricane storms initially occurred in the United States from late August to the beginning of October. However, this changed in the 20th century in June, July, and the beginning of August.

Some individuals have politicized climate change, with various leaders and stakeholders having their points of view on the subject. Mr Trump referred to climate change as a "hoax," implying it was a myth. However, during his tenure as president of the United States, President Trump acknowledged that it was not a hoax but still denied his knowledge of the subject as being human-made (Friedman, 2018). According to him, the scientists had a political agenda, and the idea of climate change being an almost entirely human situation would cost the economy millions of jobs. The president's adviser and other Republicans would then support Mr. Trump's position on the role of human activities in climate change (Friedman, 2018). Many activists and scientists came out to defend their claim, disputing the president and his allies, who they say were giving excuses for the climate change subject.

Counterargument

Despite these views, with some saying that the scientific basis to prove climate change is due to human activities is theoretical, and that Solar Irradiance is more responsible for the change, new evidence proves otherwise. Using the Total Solar Irradiance in measuring the energy changes experienced by the earth from the sun, the scientists in the study found that solar

variability influenced the past climate changes (NASA, 2023). One instance of that proof was notable in the decrease in solar activity and increase in volcanicity, helping trigger the Little Ice Age according to the graph of temperature vs. Solar Activity in the appendix. However, the graph also displayed other unexplainable changes using the sun's energy changes. The average amount of the sun's energy remained constant or slightly declined from 1750 (NASA, 2023). The assumption that a more active sun caused global warming would be true if all the parts of the atmosphere were warm. However, the upper atmosphere is cooler, the surface and the lower parts warmer. The reason is that greenhouse gases regulate heat loss. The energy from the sun supports life on Earth, and that converted light energy is always subject to absorption by greenhouse gases and is responsible for regulating the heat from the sun that could go to waste if it reaches space (Turrentine, 2022). For this reason, scientists all agree that climate change is anthropogenic and that the 1.9 degrees Fahrenheit increase in temperature to this moment is due to the activities of human beings in the 20th century.

Human Activities on Climate Change

From a personal perspective, I agree with the proponents of human beings being the leading cause of climate change. The proof lies in examining the effects of human activities on the level of greenhouse gas concentration on Earth. Human activities and practices such as agriculture, manufacturing, and processing have increased the concentration of greenhouse gases (GHGs) that trap heat in the atmosphere. Thereby increases, including burning fossil fuels like coal, oil and natural gas. The carbon dioxide levels before the industrial period were 280 parts per million, but today, the estimation is 410 parts per million (National Academies, 2019). This is to say that even though there was carbon dioxide before, its levels have increased, probably from the 1950s. According to the National Academies (2019), it would have taken about 5 to 20

millenniums in the pre-industrial era to reach the present carbon dioxide levels in the past 60 years.

Humans need electric power and heat; one way is by burning fossil fuels. When humans burn coal, gas, and oil, they produce carbon dioxide, methane, and nitrous oxide, both greenhouse gases. These gases cover the earth and trap the sun's heat (United Nations, 2020). In the United States, approximately 60 percent of electricity originates from coal, fossil fuels, and natural gas (Turrentine, 2022). This has led to the release of up to a quarter of the United States' greenhouse gas emissions. Many other statistics on the human activities that influence climate change in the United States are in the appendix.

The production and manufacturing processes humans use to obtain goods emit industrial gases that originate from fossil fuels. Mining and construction also release these greenhouse gases into the atmosphere. The machines involved in these processes also run on materials from fossil fuels like plastics, coal, oil, or gas. Since these manufacturing activities are the foundations on which human existence has relied during the post-industrial era, they are the leading cause of global greenhouse gas emissions.Additionally, agriculture, deforestation, and other land uses have significantly contributed to the increased greenhouse gases in the atmosphere. Deforestation reduces the capacity of the forests to absorb carbon dioxide, interfering with the natural balance of atmospheric gases. Recent reports indicate the destruction of approximately 12 million hectares of land yearly (United Nations, 2020). Human beings also get involved in agricultural activities for food production. These activities run on machines that use fossil fuels, such as fishing boats and the machines that manufacture manure. Agriculture, deforestation, and other land uses contribute to a quarter of all greenhouse gas emissions, making these human activities significant contributors to climate change.

Transportation is another human activity that releases more carbon dioxide and other greenhouse gases. Industrialization resulted in the advancement of modes of transportation, giving rise to the use of cars, ships, planes, and trucks, among others (United Nations, 2020). These automobiles depend on fossil fuels to run, contributing to greenhouse gases. Vehicles operating on the road must combust petroleum products like gasoline to move, contributing to the most significant pollution (Turrentine, 2022). The gas emissions from the ships and the plans are also elevating. The transport sector now accounts for another a quarter of the world's total greenhouse gas emissions, significantly contributing to climate change.

Conclusion

Natural factors like solar irradiation, movement of the tectonic plates, and the changes in the sun's position played a part in the distant past climatic changes. However, these changes were minor and had no significant effect on climate compared to modern-day changes. Other perspectives have debated the human hand in today's climatic changes, even though science proves otherwise. Human activities such as agriculture, electric power generation, transportation, deforestation, mining, and construction, among other manufacturing and processing activities, are all proof of the significant involvement of humans in climate change. These activities lead to the burning of fossil fuels that contribute to greenhouse gas emissions, leading to climate change.

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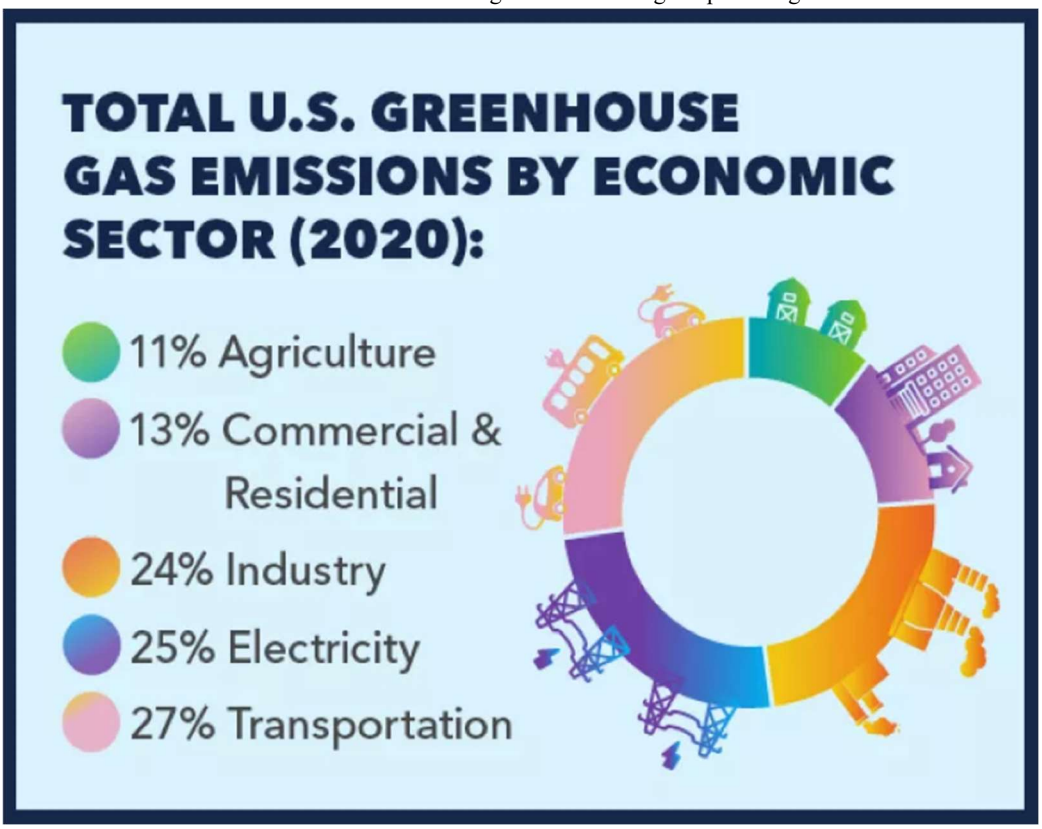
Appendix

Human activities contributing to climate change in percentages.



Solar Irradiance Study