**Anthropogenic Climate Change: Real or Fake?**

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Multiple peer-reviewed research studies have demonstrated that almost 90 percent of the ongoing climate changes in the past centuries result from the numerous activities humans perform in their daily activities. Additionally, other leading global organizations have released multiple statements in support of the result from the scientific literature. Undeniably, any person who observes the changing environmental processes would be assured that climate change is ongoing, considering the climatic conditions' changing levels. The environment continues to accumulate a vast amount of greenhouse gases, and many organizations concerned with environment conservation and management have blamed man for the release of such gases that eventually interfere with the normal processes within the atmosphere. Therefore, anthropogenic climate change is not fake news, considering the vast volume of data available to the public. The process is real, and man should be blamed entirely for the various problems they have exposed to the environment. Thus, the consensus reached by the scientists and organizations should not be ignored because the future of everyone solely depends on what the environment will offer in the future (Barnett, 2020). To validate and support the other scientists' consensus, this section considers a review of various scientific articles that demonstrated how man has and continues to expose the environment to more danger.

The analysis report provided by the intergovernmental panel on climate change (IPCC) outlines human influence as a major contributor towards climate change that results from their various actions on earth's climate systems. The last assessment provides unique scientific knowledge that the researchers acquired through multiple means, such as observations and modeling of other previous studies, which can be used as sources of evidence that links human activities to the increasing levels of climate change. The earth's climate system is mainly composed of solar radiation, which for a long time has remained constant. As a result, the world has continued to experience a balanced level of incoming and outgoing solar radiation. However, over time, global energy changes have been realized, which results from either of the solar radiations. The change in the balance of the radiations is an indication that the amount of energy generated by the sun or the earth's systems is interfered with. As a result, the earth may experience extreme heat or cold, depending on the particular radiation that surpasses the other in terms of the energy levels. This means that the amount of energy that radiation contains depends on the atmosphere's temperature and the earth's system.

Therefore, the changes in temperature levels that interfere with energy concentration remain a significant challenge within the global ecosystem, which prompted many scholars to identify the factors that result in the instabilities. Studies have proved that temperature changes result from greenhouse gas emissions (GHGs) and aerosols within the atmosphere. On the other hand, the earth's energy budget does not experience significant changes as compared to atmospheric energy. However, the ocean heat content has shown that the earth's temperature levels also change when exposed to intense radiation. This means that the earth's energy is dependant on the atmosphere's reflectivity, which is also determined by the quantity of the aerosols. A faster reflection of the atmospheric radiation means that the earth's energy content also rises. The primary human activities that produce the aerosols include industrial emissions, biomass burning, and other aerosol precursors resulting from various formations.

The impacts of aerosols are well known and acknowledged as one of the main factors driving climate change. The aerosol exists in different forms, such as the black carbon, that determines the atmosphere's reflective nature. On the other hand, other aerosols increase the rate at which the atmosphere absorbs the energy radiations. When the aerosols get into the atmosphere, they impact the climate by directly scattering the incoming solar radiation. After that, the aerosols absorb the incoming radiation and traps the outgoing ones. Besides, the aerosols in their different forms cause alteration within the clouds, which usually happens indirectly. The cloud albedo is the most affected during the process. The aerosols that reach the clouds induce condensation, indicating that any small amount of the gases in the atmosphere can lead to significant changes in the cloud albedo. Clouds have continuously played a critical role in determining climate issues considering their ability to perform two specific functions. Firstly, they can increase albedo, which serves to cool the planet. Secondly, clouds often lead to the warming effect when radiation transfer takes place.

The adoption of new farming practices and the rising climate mitigation pressures by agricultural farmers to respond to the changing climatic conditions is another way GHGs get into the atmosphere. The need to produce enough food that can support the growing global population is a crucial issue that has prompted the need to make agricultural activities more efficient and sustainable (Ray et al., 2019). As a result, farmers have considered the application of other farming methodologies to turn unproductive lands into agricultural farms by the use of sophisticated tools and chemicals used in treating the crops to ensure high productivity. Arbuckle et al. (2015) provide that the intensification of agricultural practices that involve the continuous application of fertilizers and chemicals is the primary source of the growing levels of greenhouse in the environment. The greenhouse gases that originate from the farms include carbon dioxide (CO2), Methane (CH4), and Nitrous Oxide (N2O). When these gases are emitted into the atmosphere, they accumulate to uncontrollable levels, leading to other severe effects such as climate warming leading to other detrimental effects. Therefore, increased greenhouse production is a major cause of climate that has promoted numerous discussions and scientific research by different scholars and organizations. The man seems to be so much in love with feeding the growing population at the expense of taking care of the same environment, which is the primary source of the climatic conditions that support agricultural activities. As a result, climate change has continued to increase throughout the years as farming activities intensify.

As a result, the increased use of chemicals and fertilizers within the farms has raised many concerns among climate change authorities on how best the farmers can control the moderate and prevent chemical use. This is an ongoing process at IOWA state where studies have shown that the climate change authorities have always put a lot of pressure on the farmers to reduce the chemicals they use to reduce greenhouse gas emissions (Arbuckle et al., 2015). The authorities advise that the only means through which the chemical substances can be reduced and eliminated from the farms is through resilient agricultural systems, as an alternative means that utilize natural means of farming. Considering the increased pressure that the interest groups put on the farmers, it is evident that the farmers, who are mostly the agricultural interest groups, have been made aware that farming activities are the main source of the increasing climate change. Therefore, they have always received a lot of information from the concerned institutions, such as the agrarian and environmental professionals, on the need to mitigate the agricultural practices that lead to climate changes. However, a particular group of farmers strongly believe in farm production and would not care much about climate change issues, as evidenced by the Iowa Farm and Rural Life Poll (IFRLP). Similarly, even the farmers who manage to practice a balanced type of farming have fully developed the interest to preserve and mitigate climate change. This means that if these groups of farmers are left to farm without proper regulation of their activities, considering their belief in agriculture, there are high chances that climate change will remain an ongoing process.

Other scientific studies have also shown how human beings facilitate anthropogenic climate change by continually altering the energy and water budget levels within the planet. The changes that occur are a result of the changing nature of the landscape or land surface. For instance, through human activities, the land surface has experienced a change in the balance of both the latent and sensible heat. Among the land-use change that is increasingly becoming a threat to the climate include the conversion the forested lands into an agricultural farm and a situation whereby people man decides to change the characteristics of given vegetation to suit their needs. The features may include changing particular vegetation's color to ensure that it adapts to a new seasonal growth due to the prevailing conditions. Besides, burning forested areas in preparation for agricultural practices is also a human-driven activity that significantly impacts the climate. For example, vegetation always acts as a buffer and store large quantities of carbon. Therefore, when the vegetation is cut, there are high chances that CO2 levels will increase in the atmosphere. In the process, the reflectivity of the land and evapotranspiration also change significantly.

The changes within the atmosphere, land, and the biosphere that result from human-induced activities have led to changes in the earth's radiation budget. As a result, radiation forcing (R.F.) occurs, which eventually leads to climatic change. In terms of definition, radiation forcing refers to the changes realized in the energy balance due to external interferences such as human activities. The radiation forcing effects that lead to climate changes include changes in both the sun's radiation and the atmospheric inert gases. Aerosol concentration is also associated with radiation forcing. However, radiation forcing does not consider an interaction between the aerosols and the clouds, as discussed in the previous paragraphs. Instead, the concept of effective radiative forcing (ERF) emerges at this point, which most scientists have considered as an essential assessment tool that helps to account for all the responses that occur within the climate system. Often, the atmosphere always experiences a net downward flux immediately after the adjustment of other environmental factors such as temperature, vapor, and the lands latent heat.

Immediately the radiative forcing (R.F.) is applied, the climate system begins to respond to some of the complex feedback the R.F. generates. Therefore, IPCC demonstrates that after the responses, the radiative forcing causes the same responses to differ in terms of linearity. Le Treut et al. (2007) have based their focus on how the different response mechanisms within the climate system help determine the impacts of various climatic changes during climatic forcing processes. Their findings show that the feedback mechanism plays a critical role in the climate system by amplifying or eliminating the severe impacts of climate change. Amplification of the climate change effects always demonstrates positive feedback, while eliminating or diminishing the same climate change effects shows negative feedback. The positive feedback that IPCC outlines in their assessment include elements such as water vapor which provides that when the surface temperature rises, then the atmospheric water vapor also increases.

However, an increase in the atmospheric water vapor leads to a rise in greenhouse gases. Water vapor is a potent Greenhouse gas whose concentration should be regulated unless the greenhouse effect would result in the process. The second positive feedback is the ice-albedo response, where the level of albedo dramatically decreases when the ice and other surfaces containing snow melt. The melting processes result in the exposure of dark surfaces found beneath the ice that absorbs the atmospheric heat. This leads to the cooling of the earth system to moderate temperatures. In contrast, the dominant-negative feedbacks are a condition that leads to increased surfaces that result from the long waver radiation (LWR) of the emitted energy. Negative feedback is different from positive feedback because some negative feedback operates quickly while others develop and operate after a more extended period and can go for decades because one can identify its effects. To fully understand the interaction between climate responses and radiative forcing, the Earth System Model (ESM) provides scientists and other scholars with a set of multiple models to observe, interpret, and solve the problems surrounding global energy balance. The application of models during the analysis of the current issues ensures that the rising air temperatures are moderated. The models are usually referred to as the climate models that provide room for a scientist to conduct experiments in which the individual aims to identify a specific change in the radiation forcing.

The continuous dumping of waste materials due to negative public perception about climate change is another factor that demonstrates how humans are the reason behind anthropogenic climate change. In this analysis, it is crucial to understand the difference between public and expert perceptions concerning the risks associated with climate change. According to the previous studies, it is evident that less than forty percent of the U.S population believe that an occurrence of climate would not affect them personally. Instead, they consider it a societal thing, which means that they have no role in raking the environment's care. This is different from the remaining sixty percent, whose beliefs in climate show that anthropogenic climate is real and can be mitigated by establishing appropriate measures to alleviate any form of human activity that leads to the changes (Capstick et al., 2015). However, the small population who do not consider climate change as an event that would impact their lives has continuously dumped waste materials aimlessly within the environment. This is known as risk perception that eventually influences an individual or group's belief to take appropriate action and mitigate the ongoing human activities that are the key contributors towards anthropogenic climate change that continues to dominate in the country and across the globe.

Therefore, it is evident that the world view and how individuals interpret climate change determined the level of preparedness that a community takes to develop the mitigation measure. However, with the increased anthropogenic climate change, there are high chances that both the public and the individuals' perception has not influenced a positive contribution to mitigating climate change issues that may. When the public perceptions are not positive towards environmental management, no person will care where they dump the waste materials that release other gases into the atmosphere as they degrade. In the past, the level of waste materials left in the open environment has increased, which calls for the organization concerned with environmental preservation to take appropriate actions that influence the public perception of the need to preserve the environment (Environmental Protection Agency. 2020). The need to influence public and individual perception is an urgent need that should be considered to develop an interest in the particular environment where they live and interact.

The increased climate change cases due to human activities severely impact water availability because man has continuously cleared more forest to obtain land for farming and settlement purposes. Forested areas are usually considered important water catchment areas where many rivers originate. However, intense deforestation indicates that evapotranspiration processes crucial in the formation of rainfall are unlikely to be experienced in the future. However, the effects of such human activities are already evident in many countries across the globe, where water availability is a significant problem that many countries must deal with. In a study conducted by Voisn et al. (2020), the scientists were interested in determining how water availability is an essential determinant of electricity production. This means a decrease in the number of water sources leads to low production of electricity. However, a scientist must identify the exact source of the problem that eventually impacts other different sectors. Undeniably, inadequate water availability is a situation that arises due to climate change that is also a product of the increasing human activities in society.

In the United States, electricity production solely depends on the flow of fresh water into the designed reservoirs where the waters help drive the massive hydroelectric turbines to generate adequate electricity that can serve the entire nation. Ninety percent of the country's electricity is water-driven, while the remaining 10 percent originates from other plants that do not depend on water. This means any change in the flow of water into the turbines would impact the lives of many U.S citizens. Besides, any organizations and companies' operationalization would come to a halt because electricity facilitates numerous processes. By focusing on the impacts of water availability on electricity production, many scientists have proven that climate change is the main problem leading to the prevailing changes. More importantly, it should be noted that most of the reserve regions in the United States are usually interconnected and dependent. This means when a particular reservoir experiences drought, then the other reserves' activities are also impacted to a larger extent.

To find out how climate changes influence water availability, the Coupled Model Inter-comparison (CIM) was used. This model combines both the general circulation and representative concentration pathways that generally denote the emission models. Through the efficient application of the models, the scholars established that climate change effects result in the modifications of the water flow through the hydropower station and plants. Mathematically, the deviation in water levels and flows into the station due to the climate changes can be illustrated as -4.5% to +4.6% and -4.6% to +2.7% under RCP4.5, and RCP8.5, respectively. The data shows how the desert areas, such as Southwest of the U.S., have continuously depended on the nation's Northern parts for electricity production. Therefore, climate change is an issue within the United States that calls for immediate intervention to mitigate the risk factors contributing to its intensification. Otherwise, the country may continue facing severe water availability problems because various factors still contribute to climate change. However, the mitigation processes should aim to look into the different activities that the people undertake that could lead to climate change and its impact. Therefore, the concerned authorities need to reconsider the procedures in mitigating the water availability issue appropriately by addressing every aspect that surrounds climate change.

The rising sea level along the coast is also a major issue that disrupts many activities in the coastal areas that serve different people. For instance, Alexandria and Athens are among the coastal regions that host the highest number of people who are always engaged in various activities in areas (Swope et al., 2018). The increased number of people along the coast is a major threat, considering the numerous activities they usually engage in. Rising sea-levels often result from climate change which is a product of the various human activities conducted along the coastal areas. The rising global levels of the sea that is a product of climate change is an ongoing problem that puts the coastal regions under a lot of pressure. Since climate change is the product of the different activities that emerge from the coastal population, the huge settlement along the area is excellent proof that the numerous changes such as rising sea level along the coast are a problem that will continue impacting people's lives. Economic activities that take place along the case have led to severe such as dumping of materials into the sea has led to a high accumulation of materials. Thus, the materials are as dangerous as fossil fuels and aerosols that make the environment an unsafe place to live in.

The increase in global temperature is another critical issue that the international panel of climate change (IPCC) focuses on in their scientific research. The team aimed to inform the national government and scientists on some of the best means to apply and assess the dangers climate change creates, including other scenarios that emerge in the process. Republishing the 2001 TAR information is IPCC's main focus, whereby they aim to provide further explanations on why there is an increasing global mean temperature than in the past. In the study, the organization is keen on comparing the TAR and the Fourth Assessment Report (AR4) (Smith et al., n.d.). The comparison showed that any slight increase in global mean temperature could lead to serious challenges within society. The utilization of the burning ambers diagram always reflects the various factors contributing to global mean temperature increases. The most dominant causes of the rise in GMT are human activities that people continue to engage in their day-to-day practices. From the second report that the IPCC team issue, it was evident that the GHGs are the most critical factors contributing to the increasing global temperatures that eventually result in severe anthropogenic interferences, which requires scientists to find better means to overcome. The IPCC estimates that by 2100, the world shall have recorded a GMT rise of about 50, leading to more consequences such as drying other water sources and more drought cases if there is no particular action taken to mitigate the increasing mean temperatures (Smith et al., n.d.). This is because the continuous increase in temperatures would threaten most systems that provide human support. The warming effect is hazardous, making it difficult for many systems to thrive and support life and other practices. Among the systems that may experience significant damages include those that support coral reefs, the endangered animal species, and biodiversity hotspots. When the value of such systems is not considered in the current human practices, there are high chances that the future generation will not have the opportunity to enjoy the type of nature they create. This calls for more scientific studies that would adequately address how the projected temperature rise would alleviate.

**Conclusion**

The need to protect the entire ecosystem is an essential move that determines the current state and future of the diverse nature that make up the environment. However, many countries, including the United have continuously realized an increase in carbon generation and other GHGs into the atmosphere. The increasing rate of accumulation of gasses exposes the ecosystem to severe threats. Exposing the ecosystem to the threats indicates that even living organisms, including humans, are also under threat. When the gases accumulate to uncontrollable levels, the ozone layer is usually depleted, exposing the earth to the dangerous ultraviolet rays and the eventual climate change that has continued to make life on the earth's ecosystem a challenge. However, climate change results from several factors that lead to an increased accumulation of gases in the atmosphere. The political thread intro provides that most countries have begun politicizing essential issues such as climate change. As a result, the national government is reluctant to develop appropriate mitigation strategies to address the ongoing challenges. Climate change politics has continued to expose the environment to more danger since such governments encourage the utilization of fossil fuels and greenhouse gases in conducting various activities. The accumulation of GHGs in the atmosphere has increased tremendously, and as such, increasing the atmospheric temperature to uncontrollable levels. Thus, any politicized economy has continued to experience more environmental challenges because huge amount of gases are released into the atmosphere, but no appropriate action is taken. This shows that when serious issues are mixed up with too much politics, there are high chances that the world will continuously experience more challenges in combating the problem.

Economically, the Intergovernmental Panel on Climate Change provides that most of the economic impacts resulting from climate change may not be observed in the short run. Instead, it is evident the various methods people use to realize an increase in the production levels in terms of yields and revenue have led to negative impacts on the environment, resulting in climate change in the long-term. The increasing application of fertilizers and pesticides to increase yield and production and, in turn, increase revenue may not expose the environment to risks immediately. However, the impacts can be felt considering the changes in climatic conditions that help agricultural productivity. The most affected regions that experience economic intros include the underdeveloped countries that lie in the lower regions. Besides, such countries may not have adequate funds to mitigate the negative influence caused by climate change issues successfully.

The social thread intro is also an essential factor that plays a critical role in increasing climate change. A combination of the roles of both humans and nature has closely been associated with the increased rate of climate change that impacts the social dimensions of life. The most affected group by climate change in society are the vulnerable groups who cannot fight for their rights whenever they face climatic challenges. For instance, vulnerable individuals are usually exposed to the effects of the fossil fuels released from the various industries that impact their lives even further. Low education and lack of financial resources are other issues people face in underdeveloped countries while adapting to global problems such as climate change. This is because they cannot access modern technologies to make them aware of the ongoing climatic challenges. This means that the poor have to struggle to know about such issues when the situation worsens.

Environmental pollution, which results from various human activities, is also a major indicator of climate change that exposes the earth system to severe challenges. According to the statement issued by the climate change organization and other scientific research studies, it is evident that climate change is mainly caused by the anthropogenic activities that humans engage in. The need to intensify agricultural production by using high concentrations of chemicals at the expense of environmental health has played a crucial role in climate changes. Land-use changes are also closely associated with the increasing climatic changes that expose the earth system that requires immediate attention. However, to understand the pathways through which the anthropogenic factors lead to climate change and mitigate its impacts, scientists need to concentrate more on identifying how greenhouse gasses and aerosols behave in the atmosphere before causing the depletions and radiation disruptions. Therefore, addressing climate change more efficiently would depend on how the concerned authorities address economic, political, social, and environmental pollution effects. Every strategic mitigating measure must include all the above factors to ensure that climate change impacts are efficiently addressed.

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