

# Evaluating the Impact of Climate Change and Growing Problem of Global Warming: An Empirical Investigation

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## **Evaluating the Impact of Climate Change and Growing Problem of Global Warming: An Empirical Investigation**

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### **Abstract**

The world is currently dealing with two problems: climate change and global warming. These phenomena are problematic in every way. The agricultural industry has been most negatively impacted by climate change since food plants and other crops are unable to adapt to the changing environment. Numerous health issues have emerged because of climate change, and as a result, the country's health system is suffering issues. Himalayan glaciers have also begun to melt because of heat waves and a rapid spike in temperature. Global warming and climate change have altered the nation's monsoon rhythm. It has not only reduced agricultural output but also caused subterranean water levels and water reservoirs to dry up. The country's coastline regions are dwindling because of sea level rise brought on by glacier melting. Heat waves and cold waves are only two of the severe issues that climate change and global warming are generating in the nation. It has become increasingly difficult for humans to survive in such circumstances.

**Keywords:** Climate Change, Global Warming, Problems, Heat Waves, Sea Level Rise

### **Introduction**

The Earth's climate system is changing due to carbon dioxide and other gases. These gases are produced due to combustion of fossil fuels. Since a significant portion of India's population depends on industries such as forestry, agriculture, and fisheries that are vulnerable to climate change, India should be concerned about this. The negative impacts of climate change, which include a decrease in precipitation and an increase in temperature, have exacerbated the livelihood problems of the Indian population. The stress that expanding industrialisation, urbanisation, and economic expansion are currently putting on the natural and social systems will be exacerbated by climate change. There is currently a great deal of worry about the rate and severity of climate change around the planet. More greenhouse gases have been released into the atmosphere since the Industrial Revolution because of human activities such rising energy usage, industry, intensive agriculture, and urban and rural expansion. As a result, the average global temperature has increased, and there is significant spatial and temporal diversity. This shift in the temperature regime pattern has a large influence on the features of precipitation, including the amount and intensity of rain and snow, the pattern of their spatial and temporal distribution, etc. Global climate impacts the behavior of soil. Rise in soil temperature, a change in soil moisture content, and an increase in CO<sub>2</sub> levels are projected to be the main effects of climate change. As a result of climate

change, it is predicted that variations in temperature and CO<sub>2</sub> levels will have the greatest effects on soil processes and soil quality. Several components are necessary for the maintenance of soil fertility and production (Udayshankar, Murthy, Madhukar, 2016 and Balasubramanian, Birundha, 2012).

The process of the Earth's average temperature rising is known as global warming. Storms, severe droughts, and floods occur more frequently as the earth grows hotter. The average air temperature on Earth's surface has increased by more than 1 degree Celsius over the previous 100 years. Climate change is a result of global warming. Since not every region of the Earth would necessarily warm up at the same time in response to increase in the global temperature, scientists occasionally use the term climate change rather than global warming. The most intense warming is occurring and will continue to be seen in the Arctic and Antarctic. A wavelength greater than the wavelength of sunlight is reflected into the atmosphere from solar radiation that reaches the surface of the Earth. Some of this energy warms the entire globe once it has been absorbed. Greenhouse gases are capable of absorbing long-wave radiation. The absorption of this long-wave radiation causes warming of the atmosphere. The earth acts as a mirror which partially reflects the heat energy in greenhouse gases. Because of the greenhouse effect, the atmosphere bounces heat energy back. A substantial naturally occurring greenhouse gas that contributes between 37% and 70% of the Earth's greenhouse effect is water vapour (Kumar, 2013 and Naidu, Raju, Satyanarayana, Kumar, & Suchitra, 2015).

### **Literature Review**

According to a study, the concentration of greenhouse gases in the atmosphere has grown since the start of the industrial period, which has resulted in climate change, a serious global environmental issue, and a threat to humankind. The trajectory of sustainable development may depend on several important factors, one of which is increasingly recognized as climate change. India should be concerned about climate change since it may harm the country. Although the full scope of climate change's consequences is yet unknown, the three main types of impacts include an increase in the frequency of catastrophic events that pose serious risks to India. Rising temperatures and shifting precipitation patterns will have a big impact on how different crops are grown, the repercussions on agriculture, and the sea level rise that submerges coastal communities. The productivity of agriculture is also impacted by the growing atmospheric carbon dioxide. All these trends will increase the vulnerability of the impoverished and landless. A rise in atmospheric carbon dioxide fertilizes crops that use the C<sub>3</sub> photosynthetic pathway, fostering their development and productivity. Crop growth rates might increase, respiration rates could increase, photosynthesis could change, insect population survival and dispersal might be influenced, creating novel crop-pest equilibriums, and the rate at which nutrients are mineralized in soils might also play a role. Evapotranspiration may increase while fertilizer usage efficiency may decrease. Due to the accessibility of water for agriculture in India, climate change has a significant impact on the utilization of agricultural land. The frequency and severity of inter- and season-to-season droughts and floods, the degradation of soil organic matter, changes in insect characteristics, the disappearance of arable land owing to coastal land submersion, and the availability of energy are all factors (Wilke, Beier, & Benelli, 2019 and Venkatraman, 2011).

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According to a study, the Himalayas are seriously concerned about climate change owing to potential consequences on their economies, ecosystems, and environment, as well as those of regions downstream. The Himalayan glaciers are melting more swiftly than those in other parts of the planet. Accelerated glacier melting has increased the likelihood of glacial hazards in the Himalayas. The temperature increase of the planet is what is causing this melting. Large icebergs floating in the Himalayan area of India are evidence of the impacts of global warming. This iceberg melts, flowing into the river basin. Sometimes the melting icebergs generate massive floods throughout the nation. In addition to influencing the agricultural industry, this causes significant harm to both human lives and property. Huge glaciers melting because of the region's frigid climate has once again an influence on agriculture and people's quality of life (Tayal, 2019 and Matawal, & Maton, 2013).

One study estimated that rising temperatures would lead to more precipitation, but it is less clear how this would affect storms. The temperature gradient affecting extratropical storms is expected to decrease as the Arctic region warms faster than the rest of the hemisphere. There are several types of regional impacts of global warming. Some of these local effects, such as ice melt, are due to a more general global change, such as temperature increase. In other instances, a change could be connected to a shift in a weather pattern or an ocean current. In some cases, the local influence may not be indicative of the general pattern and may even be exaggerated. Global warming affects regional climate in three ways: Ice formation or melt, changes in the hydrologic cycle, and changes in air and ocean currents. The beach will also be significantly affected by sea level rise. The oceans play a variety of roles in global warming. By absorbing a large portion of the carbon dioxide that would otherwise stay in the atmosphere, the oceans serve as a carbon dioxide sink. Ocean acidification, however, is a result of increasing carbon dioxide levels. Additionally, the capacity of the oceans to absorb more carbon dioxide declines as ocean temperatures increase. There will be various effects of global warming on rivers. Global warming has two effects: warming of the ocean surface, which increases temperature stratification, and melting of glaciers and ice sheets, which causes sea levels to rise. Changes in ocean circulation on a broad scale are another potential effect (Udayshankar, Murthy, Madhukar, 2016 and Wanders, Philip, et.al. 2017).

According to one research, changes in environmental systems and in the quality of the water, air, and food, have an indirect impact on individuals. Changes in climate change directly impact the human life. Despite the fact that the impacts of climate change are now minimal, they are anticipated to continuously impact badly across all nations and areas. There is evidence that due to climate change, the seasonal distribution of many allergen-causing pollen species has changed. They have virtually certainly decided that there have been more heat-related fatalities and that the distribution of a number of infectious disease vectors has changed as a result of climate change. Warmer temperatures, heavy rainfall, and high humidity have led to an increase in human disease. Several diseases that were thought to have been eradicated appear to be reemerging (Bush, Lubeet et.al, 2011).

According to research, the rise in sea level has an impact on people who live along the shore. It is one of the most harmful aspects of global warming. An increase in the radiation force on the climate system brought on by increased anthropogenic emissions of greenhouse gases, primarily carbon dioxide, is what causes global warming. The pre-industrial world's average surface

temperature would increase by 1.5 to 4.5 °C if carbon dioxide concentrations doubled. As glaciers and ice caps melt because of an increase in the world's average temperature, sea level rises. Sea level rise is expected to accelerate as long as air temperatures keep rising. Coastal flooding, erosion, saltwater pollution of freshwater sources, increased salinity of agricultural fields, storm surges from hurricanes, etc. are all negative effects of sea level rise. There are many people live in low-lying coastal areas who are at risk from the effects of sea level rise (Shukla, Verma, & Misra, 2017 and Adve, 2019).

### Methodology

This study is descriptive in nature in which data is obtained from 206 respondents who have faced the consequences of Climate change and global warming. In the study, respondents from different backgrounds have been covered. A checklist question was used to analyze and interpret the data. In a checklist question respondents choose “Yes” or “No” for all the questions

**Table 1. Evaluating the Impact of Climate Change and Growing Problem of Global Warming**

	<b>Evaluating the Impact of Climate Change and Growing Problem of Global Warming</b>	Yes	% Yes	No	%No	Total
1.	Climate change and Global warming impacts the agricultural activities	179	86.89	27	13.11	206
2.	Climate change and Global warming increases the global temperature	183	88.83	23	11.17	206
3.	Climate change and global warming reduces the coastal areas	188	91.26	18	8.74	206
4.	Climate change and global warming results in warming of Himalayas	174	84.47	32	15.53	206
5.	Climate change and global warming changes the weather	191	92.72	15	7.28	206
6.	Climate change and global warming impacts the rainfall in the country	169	82.04	37	17.96	206
7.	Climate change and global warming results in droughts and floods	162	78.64	44	21.36	206
8.	Climate change and global warming impacts the economy of the country	159	77.18	47	22.82	206

Table1 Shows that 92.72% respondents agree that Climate change and global warming changes the weather while 91.26% respondents agree that Climate change and global warming reduces the coastal areas. 88.83% respondents agree that Climate change and Global warming increases the global temperature while 86.89% respondents agree that Climate change and Global warming impacts the agricultural activities. 84.47% respondents agree that Climate change and global warming results in warming of Himalayas while 82.04% respondents agree that Climate change and global warming impacts the rainfall in the country. 77.18% respondents agree that Climate change and global warming impacts the economy of the country, while 78.64% respondents agree that Climate change and global warming results in droughts and floods.

## Conclusion

Because of human activities connected to industry, transportation, and modernization, the atmosphere's concentration of greenhouse gases is steadily rising, which causes the earth's temperature to progressively rise. Climate change is this phenomenon. Ice caps and glaciers may melt because of the rise in global temperatures, flooding certain coastal regions and low-lying islands and raising the sea level. The cold is welcomed to stay as solid ice melts. In the middle of a lengthy debate about global warming, a stunning fact regarding global cooling has arisen. When the temperature increases, ice melts quickly. Snow does not make you feel chilly when it is still solid when it falls; however, as it melts, it does. The situation is evolving right now. Ice will melt because of global warming, which will worsen the current state of global cold. Climate change is expected to have an influence on people's well-being in several areas, including capital, ecosystem, sickness, and migration. No matter how significant the issue is, it is not apparent how to determine its value given the state of the economy. At the very least, a large change necessitates a switch from an agricultural to another economy, which reduces dependency on agriculture. As a result, of heat waves, floods, storms, and droughts, climate change would lead to a rise in the number of fatalities, diseases, and injuries. Floods are unforeseen, high-impact catastrophes that have the potential to destroy both populous regions and physical infrastructure. Over the past 20 years, there have been several terrible storm and flood tragedies. How susceptible a person is to weather-related disasters depends on characteristics about them, including their age, where they live, and other social and environmental variables. Densely populated low-lying coastal areas incur disproportionately high health expenditures. More hot days, scorching nights, and heat waves are occurring. There is evidence that short-term increases in mortality are linked to heat waves.

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