Human Activities and Their Contribution to Climate Change

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Climatic change refers to a lasting change in the earth's weather, particularly a change due to increased atmospheric temperature. IPCC (2010) defines climatic change as the change in climate due to natural variability or increased human actions. Human actions lead to climate change. Actions like deforestation, the use of aerosols, and the effect of increased industrialization are among the causes of climate change. The paper focuses on showing that human activities lead to climate change.

Human Activities are essential in causing climate change.

Human activities cause the emission of greenhouse gases into the atmosphere. Their accumulation results in increased concentration with time. They are a result of the industrial era. The release of carbon dioxide due to increased fossil fuel use, deforestation and increased decaying of materials, agricultural activities resulting in increased methane gas release, and increased nitrous oxide due to increased use of fertilizers and fossil fuel use by humans lead to an increased greenhouse effect (IPCC, 2010).

Due to human activities, there is also an increase in the concentration of halocarbon gases like chlorofluorocarbons e.g. Dichlorodifluoromethane. Increased use of fluorocarbons as refrigerating agents and in related industrial processes causes stratospheric ozone depletion. Increased international regulation of the release of fluorocarbons has led to decreased chlorofluorocarbon gas use in recent years. Increased aerosols released directly or indirectly by human activities such as increased use of chemicals in the atmosphere have led to global warming. Increased use of fossil fuels and burning of biomass due to human activities leads to increased aerosol release that contains sulfur compounds, biological compounds, and black carbon. Surface mining and industrialized processes increase dust in the atmosphere, leading to increased climatic change worldwide.

Water vapor is commonly regarded as the most plentiful and significant greenhouse gas available in the atmosphere. Human activities potentially have small effects on water vapor. Though indirect, the potential of human activities to affect available water vapor in the atmosphere is high through climatic change (Wang et al. 2015). Directly, human activities lead to increased methane emissions,

in the stratosphere methane undergoes a chemical reaction that results in increased water vapor in the atmosphere that is indirectly attributed to human activities.

Increased atmospheric temperatures due to human activities lead to increased precipitation; thus, ecosystem service value may increase due to human activities. Global warming due to human activities such as the emission of anthropogenic gases or greenhouse gases at higher levels affects freshwater distribution, causing variation in the distribution of rainfall, which causes flooding in some parts of the world such as Australia. Wang et al. (2015) provide evidence that increased emissions of greenhouse gases cause intensification of heavy precipitation occurrences in the Northern Hemisphere.

Increased flooding and events of global warming are heavily linked to human activities such as deforestation, and the increased release of greenhouse gases causing increased temperatures that in turn result in increased glacier melting and increased precipitation that causes heavy rainfall leading to flooding (Wang et al. 2015). The issue of glacier melting hurts rainfall, too. The belief is that decreased rainfall will occur due to decreased mountain glaciers. As a result, there will be increased droughts in different parts of the world.

A Counter Argument:

On the contrary, Zhan et al. (2011) argue that human activities produce little or no effects on climate change compared to natural activities. Volcanic eruptions release not only carbon dioxide but also aerosols. Soot, salt, and dust are produced as a result, and they scatter the arriving solar radiation. They block the incoming sunlight causing a cooling effect attributed to climate change. Violent volcanic eruptions release dust particles and sulfur dioxide that combine with water vapor, resulting in sulphuric acid and sulfate particles known as sulfurous aerosols, which cause climatic change. Volcanoes erupting at lower latitudes cause hemispheric warming.

Uneven heating of the Earth caused by global wind patterns drives oceanic surface currents, causing variation in rainfall in different parts of the world. As a result, climate change is driven by the variation in heating on the ocean’s surface, leading to uneven rainfall patterns (Zhan et al. 2011). Zhan argues that climate change is also affected by the movement of crustal plates. Over different geological timescales, tectonic plates of the earth move. The movement carries landmasses to different latitudes and locations; it greatly affects ocean water, air, and continental climates differently worldwide.

Radiative forcings also cause climate change. The incoming and outgoing energy of the Earth determines the average temperature globally. The energy balance can therefore be altered in different ways, one of which may lead to increased or decreased solar intensity. Reflection of solar radiation by frost or water may rise or fall, thus causing more or less radiation to be reflected into space rather than onto Earth’s surface. Also, the amount of infrared radiation emitted into space from

Earth’s surface may increase or decrease. These factors that cause Earth’s energy balance variation are known as “radiative forcing.” Therefore, positive forcing like the one produced by increased greenhouse gas concentration warms the earth’s surface. Negative forcing like the one created by flying particles that reflect the solar energy cools the earth’s surface, hence evidence of climate change.

Conclusion:

Climate change adversely affects human beings. It is related to increased temperature and increased exposure to ultraviolet rays due to the depletion of the ozone layer, which can cause skin diseases. Climate change has been associated with increased flooding and drought that pose a danger to the lives of human beings. Though it is arguable what the main cause of climate change is, it is evident that it is influenced by human and natural activities. Some researchers attribute it to human activities, some to natural activities whereas the majority attribute it to both.

References

IPCC, (2007). “Climate Change. The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.” Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

Wang H., Shunli Z., Xiaobing L., Honghai L., Dengkai C., Kaikai X., (2015). “The influence of climate change and human activities on ecosystem service value.” State Key Laboratory Lof Earth’s Surface Processes and Resource Ecology, College Of Resources Science And Technology, Beijing Normal University, Beijing 100875, China.

Zhan, M., Cao, C., Wang, J., Jiang, Y., Cai, M., Yue, L., & Shahrear, A. (2011). “Dynamics methane emission, active soil organic carbon and their relationships in wetland integrated rice-duck systems in Southern China”. Nutrient Cycling in Agroecosystems, 89(1), 1-13.