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Climate Change Causes Food Insecurity for Developing Countries

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Abstract

At the moment, climate change is one of the most urgent issue worldwide. This is due to long-term climate trends and changes in social lifestyle. Another reason is the greenhouse gases produced by excessive fuel use. The intensity of weather, the decline in human health, and the devastation of natural ecosystems are all contributing factors. Intergovernmental Panel on Climate Change (IPCC) suggests controlling the avaeage temperate rise at 1.5 degrees Celsius to reduce global warming's intensity. The three major green house gasses responsible for global warming are carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O) emitted from burning fossil fuels. Climate change is affecting the entire world, but poor and developing countries are suffering the most. The effects of climate change are all-encompassing. It affects agriculture, human health and crop productivity. A decrease have been observed in maize and wheat production in worst cases of climate change. This deficiency can lead to a food crisis. Poor and developing countries do not have the necessary resources to cope with the situation. They can't mould themselves quickly enough. Due to the lack of resources, they cannot discover new seeds to increase food production and are unable to improve their irrigation system. Climate change and rising temperatures contribute to the rapid growth of harmful bacteria and pathogens. These microbes have become a source of food contamination. Changes in rainfall patterns is also an important issue that affects the agricultural sector and the quality of irrigation water used. The risk of water pollution also increases. The gases produced from food waste, like greenhouse gases, are also harmful. Food waste in neighbourhoods releases methane gas, harming the environment. Commodity shortage and rising prices are major problems for people in poor and developing countries. The best strategy to deal with all these problems is to find new methods for agriculture that cope with climate change. To solve all these problems, government and international organizations should come forward and work together to help poor nations

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Introduction

The worldwide climate change problem is caused by a long-term process of change climate trends and conditions. This is due to the greenhouse gases released due to excessive utilization of fossil fuels, agriculture, industrial and other anthropogenic activities. Due to these gases, global warming has led to extreme weather, health problems and ecosystem destruction. Climate change pertains to the long-term modification of temperature and typical meteorological patterns in a place. Climate change could be natural or man-made and is often associated with the phenomenon of rising global temperature, the incremental rise in the overall temperature of Earth's atmospheric layer generally ascribed as the greenhouse effect caused by elevated concentrations of carbon dioxide and other pollutants. High emission of these greenhouse gases has led to changes in climate trends. Among the upcoming challenges associated with climate change are natural disasters, economic losses, food insecurity and risks like water scarcity, health problems and changes in the natural ecosystem.[1]

Climate variability and planetary heating are primarily induced by the greenhouse gases carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). While with reference to climate change, the Intergovernmental Panel (IPCC) has advised restricting planetary heating to 1.5 degrees Celsius in the context of these gases. Modern human activities are the main cause of climate change. These activities have disturbed the natural balance. Gases are being produced due to the use of fossil fuel-based energy; the structure of the earth is changing due to construction activities supporting deforestation. All these activities together are degrading the Earth's environment.[2,3] Climate change affects human health through heat intensification, drought, floods, vector-borne diseases and malnutrition. Developing and poor countries are more affected by this change. But this does not mean that developed countries are safe from this change. Rich countries are also facing the threat

of climate change, an example of which is the heat wave that hit the Europe in 2003.[4]

Now we are experiencing a rapidly changing environment, in terms of heat waves, precipitation patterns and temperature fluctuations. The pertaining climatic patterns urges the growth in population of invasive insect species, new weeds which can lead to decrease in the soil fertility and food insecurity.[5,6] Climate change influences the spread of communicable diseases as well. In such situations, establishing better surveillance systems, creating effective strategies for improving public health, making people aware of the changing conditions and making them healthier. Initiatives to encourage healthy lifestyle adoption are indispensable.[6]

Perceptions of climate change are shaped by cultural contexts such as worldview and political ideology, which influence the detection and interpretation of climate events and the resulting actions, with rule-based decisions based on ethical or societal obligations offering the best prospects for sustainable action. Non-climatic elements also have a significant impact on climate change. One of the major cause of climate is the discharge of greenhouse gases. Greenhouse gases have always been important in the climate history of the Earth. Climate change is not limited only to increased heat, but it is also affecting the rapid melting of glaciers, rising sea levels, droughts, monsoons, reduced crop productivity and infectious diseases.[7]

The cause of climate change is greenhouse gases accumulated in the atmosphere. Greenhouse gas is mainly produced as a result of human activities. For example, energy consumption, increasing construction activities, which have changed the use of land. These climatic events, human activities and deteriorating environment are pushing towards the risk of food insecurity. Actions being taken globally to tackle this menace include understanding the causes, changing human attitudes to cope with the threat.

How climate change is affecting food production?

It has been observed that climate change is causing global food shortage. A decrease in the production of corn, wheat and some other crops has increased the feeling of food insecurity. Many other territories are experiencing more serious consequences due to lack of water and changing soil humidity. The harm to the production of soybean and rice crop is less. Also, experts say that the increase in CO_2 will have a positive impact on crop production, but net food insecurity will be seen owing to disturbed agricultural patterns.

Climate change plays a major role in affecting global food productivity. Climate change affects agricultural practices, food security, and crop growth in many ways. It can also affect global food production. The production capacity has been reduced globally. According to the experts, there has been a decrease in the production of wheat and corn. Mixed reactions have been observed in soybeans and other similar crops. Positive effects of climate change have been observed in some areas and decrease in others.[8]

Developing countries are suffering more from climate change. Their measures to increase food productivity are not much effective than those of the developed countries. Developing countries need the ability to change crops according to the season, improve irrigation systems and agricultural practices to avoid negative impacts of climate change. There is a need to adapt to these changing climatic conditions. These measures can help reducing the negative impacts, but developing countries do not have the required skills and resources.[9]

According to experts, due to climate change, food scarcity is inevitable soon. Areas where there is already a shortage of food will be more affected by the lack of food. As per the experts, although the growth of plants can be improved by increasing atmospheric CO_2. But it is also predicted that the rise in temperature due to climate change will damage the agricultural sector. Due to this loss, commodity prices will go up which will be a difficult situation for the public.[10]

Climate change is not only harmful to developing countries, but to the developed countries as well. As it reduce the continuity and the nutritional quality of their food supply. If negative impacts continue to occur in crop productivity and nutrition in countries, there will be potential threats to human health.[11]

Consequently, it is clear that climate change is having negative effect on crop productivity in many areas. Some areas may benefit temporarily from these climate changes, but overall it is detrimental. Necessary measures should be taken to deal with this situation. A food system should be created that can cope with these changing conditions to avoid food crisis.

How climate change is causing food to contaminate?

Climate change has many impacts on food productivity and food security. Let's see how these causes affect population.

1. Impact on Food Production and Price Inflation:
The risk of food production being affected around the world is also growing due to the ever-increasing climate change. Local extreme weather events caused by climate change affect the growth of short-term crops in these areas. These adverse effects then become a source of long-term changes. Significant change in climate, drought, floods and storms negatively effecting crop production which can lead to food scarcities in near future. Decrease in food production causes a substantial increase in commodity prices, which is why poor and less developed countries are adversely affected by climate change.

2. Food Contamination and Climate Change:
The population of the world faces a food crisis due to catastrophic changes in the weather. As the temperature rises, harmful bacteria, fungi, and pathogens relocate to new places to continue their growth and reproduction. This activity of these harmful microbes paves the way for food contamination. An example of this is that, during the hot season, bacteria grow rapidly in perishable food. This contaminated food can cause many diseases. Similarly, the quality of water used can be affected by changes in rainfall patterns. If such contaminated water is used for agriculture and food production, then there may be a risk of increased pollution.

3. Food Waste and Methane Gas Emissions Outputs:
Food loss and waste worsen the climate change emergency. The complete food supply chain from manufacturing to transportation and handling, adds to greenhouse gas emissions outputs. Production, transportation, and packaging of food generate significant amount of carbon dioxide (CO_2). Another main cause of environmental pollution is the throwing of leftover food in garbage bins or open spaces. After decomposition, this food produces methane gas, which is more harmful to the environment than greenhouse gas. It is important to make people aware of this reference. In this way, food waste will be avoided and methane gas emission will also be minimized. It is very important to ensure these measures for the improvement of environment and also for food security.

4. Global Implications and Human Cost:
Rising food prices is a problem all over the world that affects people's daily lives. In every country, a budget is allocated for the purchase of food items. American citizens spend ten percent of their income, Indian citizens spend thirty percent and Kenyans spend fifty percent of their income on food. The fear of food shortage caused by climate change and the continuous increase in prices due to the lack of food grains cannot be seen. People living in different regions of the world are facing the same problems due to climate change. About 193 million people are suffering from food crisis. Governments and international organizations should take necessary steps for the betterment of the people in crisis.[12, 13]

In summary, climate change affect food production, safety, and contamination. As we grapple with these challenges, it's essential to prioritize resilient adaptation, sustainable practices, and equitable solutions to safeguard our food supply and the well-being of vulnerable populations.

Conclusion

To conclude, the change of weather brings many difficulties in creating, producing, and avoiding contamination of the food. It is reducing the level of food production and changes in food security which leads to increasing dangers of hunger. Harmful microbes and diseases linked with these pathogens affects both the quality and quantity of food. The unnatural way of disposing off food favors the production of greenhouse gases which in turn increased the climate crisis by amplifying the risks. The investigations shows that the anticipated adjustment of prospering association, natural progress, equal cost and resilience are important to address to tackle and solve these issues. These solutions can minimize the impact of climate change on food and also help to protect the people suffering from this severe issue.

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