

11. Impacts of Climate Change Due to Global Warming

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Abstract:

Climate change is one of the main environmental challenges facing the world today. Climate change occurs as a result of an imbalance between incoming and outgoing radiation in the atmosphere. Climate change is mainly caused by human activities, especially through increased greenhouse gas emissions.

Climate change is associated with various adverse impacts on agriculture, water resources, forest and biodiversity, health and increase in temperature. Decline in agricultural productivity is the main impact of climate change. A majority of population depends on agriculture directly or indirectly due to rapid industrialization, urbanization and economic development. Climate change affects life around the globe. It impacts plants and animals. With consequences for the survival. In humans, climate change has multiple deleterious consequences. Climate change creates water and food insecurity, increased mortality, and population movement. Climate change is already affecting the global environment in a variety of ways. Glaciers are melting, enhanced sea level rise, plant and animal ranges have shifted and trees are flowering sooner. During the 20th century, the Earth's average temperature rose one degree Fahrenheit to its highest level in the past four centuries. Scientists project that if emissions of heat-trapping carbon emissions aren't reduced, average surface temperatures could increase by 3 to 5 degrees Fahrenheit by the end of this century. This paper reports the impact of climate change and possible solutions.

Keywords:

Climate Change, Global Warming, Ecosystem, Plant and Animal Survival, Human Health, Populations, Fossil Fuel Burning, Prevention, Sustainable Development.

11.1 Introduction:

Climate change has always happened on Earth but its rapid rate and important magnitude occurring now are of great concern. Climate change¹⁻⁵ occurs as a result of an imbalance between incoming and outgoing radiation in the atmosphere. There is overwhelming evidence showing that human activities since the early 20th century (industrial revolution), mainly fossil fuel burning (e.g., burning coal, oil, and natural gas), but also agricultural emissions and deforestation have contributed to climate change while changes in solar activity and volcanic eruptions have played a minor role.

Climate change is recognized as a serious threat to ecosystem, biodiversity and health. It is associated with alterations in the physical environment of the planet Earth and affects life around the globe. Scientists have predicted that global temperatures will continue to rise for the years to come, largely due to greenhouse gasses produced by human activities.

According to the Intergovernmental Panel on Climate Change IPCC, the level of climate change effects on different regions will differ over time. High temperatures are to blame for an increase in heat related deaths and illness, rising seas, increased storm intensity and many other dangerous consequences of climate change.

The heat-trapping gases emitted by power plants, automobiles, deforestation and other sources are warming up the planet⁶⁻⁹. Climate change arising due to the increasing concentration of greenhouse gases in the atmosphere since the industrial revolution times has emerged as a serious global environmental issue and poses threats and challenges to mankind. Climate change is increasingly recognized as one of the potential critical factors in sustainable development¹⁰⁻¹². The rate of CO₂ release into the atmosphere has increased by 30 times in the last 3-4 decades. It is estimated that a 0.5 oC rise in winter temperature

could reduce the wheat yield by 0.45 ton per hectare. A recent World Bank report studied two drought-prone regions in Andhra Pradesh and Maharashtra on climate change impacts. The current climate change is associated with increased Earth's temperature. Land surfaces are heating faster than ocean surfaces.

A warmer atmosphere can hold more water vapor. Over the past 70 years, the Earth's temperature has increased by approximately 0.7°C. Since 1950, the number of cold days and nights has decreased while the number of warm days and nights has increased. Since 1978, the rate of warming has been greater than at any other time.

Climate change can cause habitat degradation or loss for several species (e.g., polar bears). Polar bears are dependent on sea ice. The increased temperature is causing the arctic sea ice to melt, damaging the polar bears' habitat.

The increased carbon dioxide level causes decrease protein levels in the tree affecting plant nutritional quality. All these changes create dehydration, malnutrition and starvation. Climate change is a major threat to human existence. Children, elderly people, poor people, workers required to wear protective clothing and subjects with chronic health conditions are at higher risk when facing heat stress. Climate change by creating unsuitable living conditions decline in freshwater availability, food shortage, and health issues will move many people.

11.2 There Are Four Main Factors:

A. Population growth: In the last century, world population has tripled. It is expected to rise from the present 7.6 billion to 8.9 billion by 2050. Water use has been growing at more than twice the rate of population increases in the last century.



Figure 11.1: Population Growth

B. Increased urbanization will focus on the demand for water to more population.

C. High level of consumption- As the world becomes more developed, the amount of domestic water used by each person is expected to rise significantly.

D. Scarcity of freshwater will disappear as climate change increases. Scientists point that higher ocean temperatures as the main culprit since hurricanes and storms get their energy from warm water. Higher temperatures increase the amount of moisture that evaporates from land and water, leading to drought in many areas. As temperatures rise globally, droughts will become more frequent and more severe, with potentially devastating consequences for agriculture, water supply and human health.

Climate change and the impacts of climate change affect ecosystems in a variety of ways. For instance, warming could force species to migrate to higher latitudes where temperatures are more conducive to their survival. In the same way, as sea level rises, saltwater intrusion into freshwater systems.



Figure 11.2: Scarcity of Freshwater

11.3 Health Impacts Due to Climate Change:

Climate change can affect human health directly (e.g., impacts of thermal stress, death) and indirectly through changes in the ranges of disease vectors (e.g., mosquitoes), waterborne pathogens, water quality, air quality and food availability. In India, almost half of the children under age five and more than one-third of the adults are undernourished.

In Bihar, Chhattisgarh, Jharkhand and Orissa, more than two out of five women are undernourished. Anemia is another major nutritional health problem in India, especially among women and children.

There is historical evidence of associations between climatic conditions and vector-borne diseases. Malaria is of great public health concern and seems likely to be the vector-borne disease most sensitive to long-term climate change. Recent analyses have shown that the malaria epidemic risk increases around fivefold in the year after an El Nino event. Asthma deaths are expected to increase by almost 20% in the next 10 years if urgent actions to curb climate change. Climate change accelerates the spread of disease primarily because of warmer global temperature. Abrupt change of temperatures leading to heat waves. In addition to changing weather patterns, climatic conditions affect diseases transmitted via vectors such as mosquitoes.

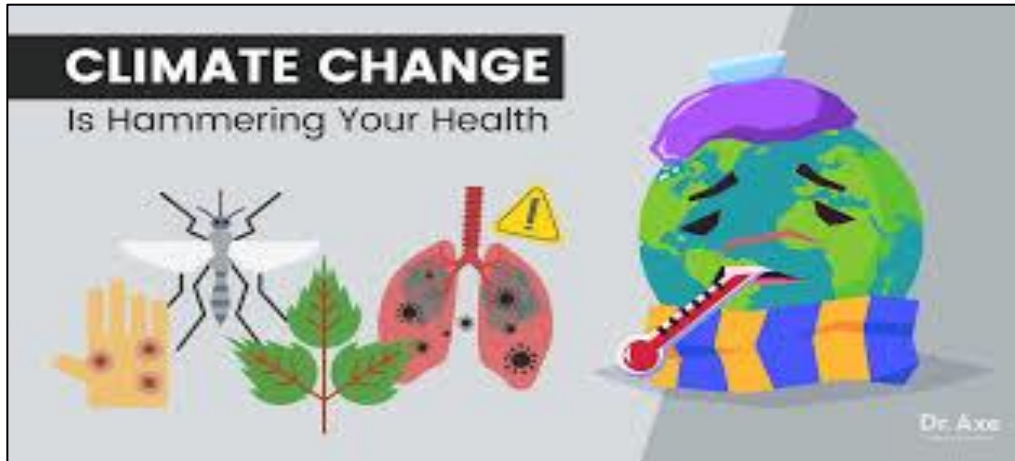


Figure 11.3: Climate Change is Hammering on Health

11.4 Conclusion:

Climate change is expected to affect the human wellbeing in many different ways. In 1992, the UN Conference on Environment and Development (UNCED) at Rio de Janeiro led to FCCC (Framework Convention on Climate Change), which laid the framework for the eventual stabilization of greenhouse gases in the atmosphere. Despite being symbolically important, Kyoto Protocol is now widely considered as a ‘failure’ because it neither has initiated emission reduction globally nor it has promised required further cuts in greenhouse gas emissions.



Figure 11.4: Kyoto Protocol

Climate change is affecting every aspect of life. It is recognized as a serious threat to ecosystem, biodiversity and health. Adaptation to health consequences of climate change and prevention of aggravation of climate change are key challenges for the society. The health sector should promote research, education and information on climate change and its consequences.

Long-term investment in renewable energy and energy efficiency is urgently needed. To spare species and protect humans, the greenhouse gas emissions should be reduced as soon as possible.

Development and deployment of low-carbon energy technologies, policies to reduce fossil fuel burning, forest preservation should be promoted. Carbon sequestration, by capturing and storing atmospheric carbon dioxide, can decrease the amount of carbon dioxide in the atmosphere and reduce climate change. More energy efficient homes and vehicles using alternative energies from sun, wind, and waves are needed. Increased use of public transportation, cycling and walking should be promoted.



Figure 11.5: Impact of Climate Change

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