



Protecting Health from Climate Change

Key Facts

- Climate change refers to any change in climate over time, whether due to natural variability or as a result of human activity.
- Dr. Margaret Chan stated that for public health, climate change is the defining issue for the 21st century. Climate and weather variables affect the air people breathe, the food they eat, the water they drink, and the chances that they will get infected with a life-threatening infectious disease.
- Climate change has made a significant impact to health. It is estimated that between 2030 to 2050, climate change will cause an additional 250,000 deaths annually. High temperatures raise the levels of ozone and other pollutants leading to 1.2 million deaths due to cardiovascular and respiratory disease annually.
- Extreme weather is the most apparent effect of climate change as extreme heat waves and heavy rain storms are occurring with increase worldwide.
- Rising temperatures and more variable rainfall patterns are expected to reduce crop yields, compromising food security and worsening undernutrition which accounts for 3 million deaths each year.
- Heat stress (hyperthermia) and extreme cold (hypothermia) caused by intense short-term temperature fluctuations significantly affect health leading to increased death rates from cardiovascular and respiratory diseases.
- Climate sensitive diseases such as diarrhea, malaria, and malnutrition caused a significant number of deaths globally. Climate change has become the new driver of malnutrition, increasing mortality rates by 5 to 20 times.
- Human activities in relation to climate change such as increased urbanization, storage of water for household use, and use of cooling systems lead to an increased risk for vector-borne diseases.

Introduction

- The United Nations Framework Convention on Climate Change (UNFCCC) defines climate change as a change which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and an addition to natural climate variability observed over comparable time periods.
- The cause of climate change is the increased emission of carbon dioxide and other greenhouse gases which trap the energy in our atmosphere causing a "greenhouse effect." This greenhouse effect warms the earth causing extreme weather patterns, compromised food security, and increased vector-related and climate-related diseases and deaths.
- Evidences suggests that various activities directly or indirectly caused by humans have resulted in the release of large amounts of carbon dioxide and other greenhouse gases in the atmosphere which causes climate change and global warming.
- Majority of these gases come from burning fossil fuels for the production of energy, with deforestation, industrial processes, and agricultural processes as significant contributors.
- Effects of climate change have made a significant impact to health. It is predicted that climate change will cause an additional 250,000 deaths annually between 2030 and 2050:
 - 38,000 are due to heat exposure in the elderly
 - 48,000 due to diarrhea
 - 60,000 due to malaria
 - 95,000 due to childhood malnutrition.
 - 9,000 due to others



Increased Risk of Disease

- Climate change affects the transmission, frequency, and severity of communicable diseases through different mechanisms depending on the nature of the disease.
- Changes in temperature increases the risk of acquiring food borne diseases since food is stored, transported, handled, and prepared under warm ambient conditions.
- Ambient temperature, humidity, and availability of water for breeding determine the distribution, reproduction rate, biting behaviour, and survival of vectors. The amount and temperature of rainfall influences the transport and transmission of infectious agents, as well as their growth and survival.
- Frequent flooding may increase the risk of pathogen transmission from rodents, causing diseases such as leptospirosis and tularemia.
- Climate change directly affects the transmission of mosquito-borne diseases, including malaria, dengue, and viral encephalitis by shifting the vector's geographic range and increasing reproductive and biting rates and by shortening the pathogen incubation period.
- Increases in sea surface temperatures and sea level can lead to increased incidence of water-borne infectious and toxin-related illnesses, such as cholera and shellfish poisoning.

Influence on Natural Disasters

- Current research findings suggest that climate change is causing a dramatic increase of occurrence and severity of extreme weather conditions worldwide causing destruction and massive disasters.
- 10 out of the 20 countries with the highest risk of disasters belong to the Western Pacific Region.
- The number of reported weather-related natural disasters has tripled globally. These lead to over 60,000 deaths every year mainly in developing countries.
- The continued increase in sea levels and occurrence of extreme weather events are expected to damage homes and business establishments as well as medical facilities.
- The unavailability of fresh water supply due to increasingly variable rainfall patterns can compromise hygiene, thereby increasing the risk of diarrheal disease which kills 2.2 million people every year.
- With the increasing frequency and intensity of floods, it is expected that it will increase the risk of water-borne diseases due to the contamination of food supplies by flood water. This could also create breeding grounds for disease-carrying insects such as mosquitoes.

Effects on Food Security



- Climate change is expected to affect all dimensions of food security: availability, accessibility, utilization, and food systems stability.
- Rising sea levels will cause floods, damage crop and affect food production and food security.
- Variable rainfall and increasing temperatures are expected to reduce crop yields due to increased crop failure and new patterns of pests in many developing countries where food security is already a problem.
- The changing sea and inland temperature, rising sea level, and changing precipitation and water availability affect the abundance, productivity, and distribution of freshwater aquatic species.
- The prevalence of malnutrition which currently causes 3.5 million deaths annually is expected to rise due to the decrease in the production of staple foods in many of the poorest regions as facilitated by the rising temperatures and variable precipitation.
- There is a need to modify consumption patterns, adopt sustainable agricultural practices, and engage in new livelihood strategies in order to keep up with the rapidly changing environment.



WHO Actions

- In 2014, the World Health Assembly ratified a WHO work plan to mitigate the effects of climate change on health. The objectives are:
 - Strengthening partnerships to support health and climate within and outside the United Nations system and providing leadership on health throughout the system-wide response of the United Nations to climate change.
 - Raising awareness of the links between health and climate, and the potential for enhancing health through mitigation of the extent of climate change through
 - The development of tools, guidance, information and training packages, as well as the networks for information dissemination.
 - Promoting and guiding the generation of scientific evidence.
 - Providing policy and technical support to the implementation of the public health response to climate change.
- The Regional Committee for the Western Pacific endorsed the Regional Framework for Action to Protect Human Health from the Effects of Climate Change in the Asia Pacific Region. (6) It encourages member states to:
 - develop national strategies and plans to include current and predicted climate change risks to control climate-sensitive health risks and outcomes
 - strengthen existing health infrastructure and human resources, surveillance, early warning, and
 - communication and response systems for climate-sensitive risks and outcomes
 - establish programmes to reduce the climate footprint of the health sector
 - assess the health impacts of the decisions made on climate change by other sectors facilitate the health sector to actively participate in the preparation of national programmes of action
 - actively participate in the development of a work plan to increase WHO's technical support to member states for addressing the effects of climate change on health.

WHO Recommendations

Health must be seen as a main and essential concern in the climate debate

- To estimate the range, timing, and magnitude of future health impacts induced by climate change, disease incidence data are needed to serve as baseline epidemiologic data.
- Adoption of best practices such as enhancing the sustainability of livelihood systems and engaging in sustainable agricultural practices must be employed.
- There is a need for an interdisciplinary and holistic approach among governments, societies, and individuals coupled with changes in behavior and practices in order to reduce the impact of climate change and ensure sustainability.
- Efficient implementation of adaptation strategies and its integration into the national health systems are essential to mitigate the health effects of the current climate variability. Surveillance systems for climate-sensitive infectious diseases should be strengthened. These include better use of early-warning information to anticipate onset, duration, and intensity of epidemics.
- Health systems must be able to withstand climate change especially in developing countries
- The co-benefits of climate change reduction and improved health should be maximized.
- The health sector should reduce its own climate footprint.
- Health sector leaders must work with climate negotiators to confront climate change.

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