



## **Climate change and its impact on human health**

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### **Abstract**

Climate change is a big threat to human health. Changing climate effects the basic factors of good health like clean air. Pure drinking water, food and habitat etc. Developing country populations particularly in its lands, arid and hilly zones and densely populated coastal areas are vulnerable. In India two third population especially living in villages directly depend on forest, fisheries and agriculture and hence more susceptible to climate change. India is experiencing the adverse effects of climate change to a great extent rainfall patterns in India is also changing, Temperature is increasing, glaciers are melting heavy rainfall, floods, droughts and heat waves etc. is damaging the human health. Diseases like allergies, skin problems, respiratory and water borne diseases are increasing day by day. The whole world especially India is in a need to overcome the problems caused by climate change and to find solutions. Adaptation and mitigation may reduce the risks caused by climate change. This article focuses on climate change. Its impact on human health and the ways to minimize its adverse effects.

**Keywords:** climate change, human health adaptation, mitigation

### **Introduction**

Development of a country may depend upon the health of and natural resources. Good health includes not only good physical and mental health but socioeconomic wellbeing also. Both health and availability of natural resources directly depend on climate. Relation between climate and human health needs not to be proved. Natural disasters like flood, drought, storms etc. damages not only the environment but to human health also. Trends in diseases and deaths if correlated with seasonal changes, extreme weather, influence of climate change on human health can be illustrated. Impacts of climate change may be direct or indirect. Children and poor people, villagers are more vulnerable.

### **Climate Change**

Climate change occurs over decades. Changes in climate have occurred naturally due to changes in solar energy output, volcanic activities and continental drift. Average surface temperature of earth has been increased upto 0.65 °C over last 50 years. Sea level is rising in recent years. Extreme weather is symbolic of climate change. Heavy rainfall in Mumbai and other areas. Heat waves in Odisha, changing patterns of rainfall (in many parts of country) may not be directly associated with climate change but may not be ignored. Heavy rainfall, floods, droughts and other natural disasters effected many lives during last years resulting in economic losses. Changing weather patterns effect human being directly or indirectly through changes in water, air, live hoods. Climate sensitive disease are being the largest killers causing excess mortality. Number of heat wave days are increasing maximum rise in mean temperatures of 0.77 °C was observed during post monsoon season followed by winter season. Heavy rainfall trends has been observed during last of April. Humidity and maximum temperature has been observed to increase during

second fort night of May and first fort night of June variation of temperature over 100 years in India has been reported as 0.5°C. Rise in sea level upto 0.59 meters has been projected in the reports of 2007 of IPCC similarly overall rainfall seems to be rise slightly but the numbers of rainy days are reduce.

### **Impact on human health**

Public health to a large extent depends on safe drinking water, food, shelter and social well beings, climate change would causes mostality, illness and mental problems.

### **Health effects of extreme temperature**

Heat waves may influence the degree of health impacts. For example, heat waves that occur earlier in the summer tend to result in more deaths than those that occur later in the season, as people have not yet acclimatized to warmer weather. Night time minimum temperature increasing more rapidly than daytime maximum temperature. Direct impacts of extreme heat include heat fatigue, exhaustion, heat rash, cramps and edema, as well as heat stroke and sunstroke. Indirect impacts, such as pre-existing health conditions exacerbated by extreme heat, cover a wide range of circulatory, respiratory and nervous system problems. Factors that increase the risk of heat related illnesses include old age, medication use (especially anticholinergic and psychotropic medication), obesity previous heat injury and skin disorders.

### **Vector born diseases**

Clean water is known to promote breeding of vector mosquitoes such as anophelies (Malaria), culex vishnui group (JE vector) and aedes (Dengue, Chikungunya) whereas polluted water bodies promote breeding of culex quiquefasciatus (Filariasis vector). Vector-borne diseases are currently prevalent in the tropics and sub-tropics and

relatively rare in temperate zones of India. Experience with mosquito-borne epidemics in the past has indicated that increases in water availability especially during post-monsoon period can lead to marked increase in population of the vector mosquitoes. In India, unplanned urbanization has also contributed to the spread of *Plasmodium vivax* malaria and Dengue. A study conducted at the national Physical Laboratory, New Delhi, on the impact of climate change on malaria reveals that the transmission windows (TWs) for malaria are predicted to increase with climate change.

#### **Air pollution and related diseases**

Air pollution causes and exacerbates acute and chronic illnesses, such as lung disease, and results in increases in health care costs and premature deaths.

#### **Health effects due to rise in sea level**

Potential effects on health due to sea level rise include. Death and injury due to flooding, reduced availability of fresh water due to saltwater intrusion, change in the distribution of disease-spreading insects and Health effect on the nutrition due to a loss in agriculture land.

#### **Health effects of retracting glaciers**

Glaciers are the source of drinking and irrigation water in the mountainous and Indo-Gangetic regions in India. Most of the states in the North, including Punjab, Haryana, Rajasthan, Uttar Pradesh, Madhya Pradesh and the north east are dependent on river water origin in the Himalayas and distribution of run-off.

#### **Responses**

There are two strategies for responding to the potential risks and impact of climate change (IPCC 2007c)

1. Mitigation, which involves policies and interventions to reduce GHG emissions or enhance the sink of gases that remove them from the atmosphere (e. g. forests and vegetation), and
2. Adaptation, which is based on preparing for, and minimizing, the predicted impacts of climate change.

Emergency response preparedness both at a municipal and provincial/state level will be critical to ensuring minimal damage and loss of life due to impacts of sea level rise. India is confronted with development imperatives, we will also be severely impacted by climate change. With close economic ties to natural resources and climate-sensitive sectors, India may face a major threat, and require serious adaptive capacity to combat climate change. With 27.5 per cent of the population still below the poverty line, reducing vulnerability to the impacts of climate change is essential. In response to the predicted changes in public health due to climate change, our policymakers need to work to strengthen the health care system along with water and wastewater systems. Adaptation will require diverse strategies like inter-sectoral coordination which could include physical modification to the built environment and improved housing and building standards. In order to address some of the predicted changes as well as those that are taking place in India in an effective manner, more emphasis is required on the policies.

National action plan on climate change in India.

- Provision of the enhanced public health care services.
- Assessment of increased burden of disease due to climate change.
- Providing high-resolution weather and climate data to study the regional pattern of diseases.
- Development of high-resolution health impact model at the state level.
- GIS mapping of access routes to health facilities in areas prone to climate extremes.
- Ecological study of air pollutants and pollen (as the triggers of asthma and respiratory diseases) and how they are affected by climate change.
- Studies on the response of disease vectors to climate change.

The extent to which human health is affected depends on the exposures of population to climate change and its environmental consequences, the sensitivity of the population to climate change and its environmental consequences, the sensitivity of the population to the exposure, and the ability of affected systems and population to adapt. Adaptation can reduce sensitivity to climate change while mitigation can reduce the exposure to climate change, including its rate and extent. Both conclusions are confirmed in this assessment. Therefore, response options to protect health from effects of climate change include the mitigation as well as adaptation. Adaptation and mitigation can complement each other and together can significantly reduce the risks of climate change. Public health training, more effective surveillance and emergency response system, and sustainable prevention and control programs. Education, awareness-raising, and the creation of legal frameworks, institutions, and an environment that enables people to take well-informed, long-term, sustainable decisions are of paramount importance.

#### **Conclusion**

Climate change has set in and will alter spatial and temporal distribution of vector-borne diseases, exacerbation in heat related mortality, air pollution related respiratory diseases and water borne diseases, if current scenario continues. In tropical countries like India, most of the identified adverse health effects due to climate change are already experienced. Climate change is happening and emissions both mitigation and adaptation is important. Even the developed nations are struggling to cope up with the challenges posed by the changing climate; India needs to put more efforts to counter the same.

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