



CLIMATE CHANGE – “A POTENTIAL THREAT TO HUMAN HEALTH”

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ABSTRACT

Climate changes have a strong impact on human health changes in climate affect the average weather conditions. There are three projected physical consequences of climate change, temperature rise, sea level rise and extremes in the hydrological cycle. The present article reviews the health consequences of human – induced climate change on sustainable development, particularly the potential impact of such change on food supply, natural disasters, infectious diseases and ecosystems. A variety of direct, indirect and systemically mediated health effects have been identified.

KEY WORDS: Climate change, impacts on health, heat waves, disasters, adaptations.

INTRODUCTION:

Climate change is a long term change in the statistical distribution of weather patterns over periods of time that range from decades to millions of years. Climate change is basically climate variability which has become faster in the last two decades. There are three projected Physical consequences of Climate change, temp rise, sea level rise and extremes in the hydrological cycle. Human – induced climate change threatens ecosystems and human health on a global scale (McMichael, 2001).

Carbon dioxide is the Primary green house gas that is contributing to recent climate change; methane and nitrous oxide are also major forcing contributors to the green house effect. The Climate changes occurred when the Industrial Revolution started. Global warming may bring

an increase in extreme events including heat waves floods and large storms which could come with high death tolls. Heat and drought are amongst the deadliest natural disasters. The improper use of land coupled with climate variations may lead to an increase in global desertification or the desertification or the degradation of soil in dry areas. Global desertification could also boost growth of harmful bacteria in the oceans (Rettner, 2011).

Climate Change impacts on Human Health:

The impact of climate change on health, depend on several factors. These factors include the effectiveness of a community's public health and safety systems to prepare for the risk and the behavior, age, gender and economic status of individuals, affected impacts will likely to vary by regions. Heat waves increase due to global warming and combine with the buildup of pollution, including ozone, a primary component of smog. Air temperature and ozone may be bad for the heart because they influence the way the automatic nervous system functions. The automatic nervous system is a part of the central nervous system that helps the body adapt to its environment. It regulates body functions including the heart's electrical activity and airflow into the lungs. Higher temperatures may also make the body more sensitive to toxins, such as ozone.

Certain vector – borne diseases illnesses in which a host organism, such as an insect, carrier and transmits a disease – causing agent are particularly affected by hotter temperatures, because these vectors are cold- blooded, they rely on their surrounding environment to control their internal heat. So an increase in temperature would potentially favor insect life and possibly allow the spread of certain diseases such as malaria into new areas. Once the soil degraded, the soil becomes unproductive. This may limit the land that can be used for agriculture to feed the world's growing population. Global desertification could also boost growth of harmful bacteria in the ocean. Desert dust supplies iron to the ocean, which many marine organisms need to live; it fueled the growth of vibrio's (a group of ocean bacteria) that cause gastroenteritis and infectious diseases in people (Kjellstrom and McMichael, 2013). Due to heat total pollen production increasing, and also increasing the population's sensitivity to pollen, as well. While genetic plays a large role in all allergies, a longer and more intense pollen season could exacerbate symptoms. Rising temperature and variable precipitation are likely to decrease the production of staple foods in many of the poorest regions (Gamble *et. al.*, 2008). This increases the prevalence of malnutrition and under nutrition which currently cause 3.1 million deaths every year. In India, every year loss of life

occurs due to excessive heat in the month of May. In this month temperature rise maximum in the range of 45-50°C in the year 2015, death tolls are abnormally high. Most of the deaths were recorded in the South Indian States of Andhra Pradesh and the neighbouring Telangana, where more than 1,735 and 585 people died respectively. These areas are most affected by the heat wave. The 2015 heat wave has had the highest recorded temperatures since 1995 increased temperatures are also likely to cause increase in eye diseases like cataract, dry eyes, pterygium and vernal kerato conjunctivitis and skin diseases (Kjellstrom *et. al.*, 2010).

Warmer air temperatures can influence the concentration of regional air pollutants and aero allergens. Allergic pollens grow more profusely in warmer climate leading to respiratory disorders such as asthma, emphysema and chronic – bronchitis and allergy problems. Climate changes also affect diseases like chronic obstructive pulmonary disease, pneumothorax and respiratory infections in children. There are also indications of relationship between air pollution and tuberculosis (Woodward, 1995).

DISASTERS:

Excessive Floods, cyclones, storms and earthquakes usually cause loss of life, infrastructure and human resources. Excessive floods contaminate drinking water creating conditions for transmission of diarrheal diseases like cholera, scarcity of water due to floods. Cyclones affect agriculture resulting in less production in rice, maize, sorghum, it have negative impact on human health leading to malnutrition spatial and temporal distribution of vector – borne diseases like malaria dengue and chikungunya are likely to be affected the most as the mosquitoes which transmit the diseases are cold blooded. Their life cycle and development of pathogen in their body are affected at varying temp and relative humidity incidence of Japanese encephalitis (JE) in India has increased Uttar Pradesh and Delhi in the last five years. Economics would play a major role in combating the potential threats (Hales *et. al.*, 2008).

In developing countries variable rainfall patterns affect the supply of fresh water. A lack of safe water can compromise hygiene and increase the risk of diarrhoeal disease, which kill almost lakhs of children every year. In extreme cases, water scarcity leads to drought and famine. Health equity and climate changes have a major impact on human health and quality of life and are interlinked in a number of ways. Over 90% of malaria and diarrhea death are borne by children aged 5 years of younger, mostly in developing countries (Pascuas *et. al.*,

2006). Other severely affected population groups include women, the elderly and people living in small Islands, developing states and other coastal regions, megacities and mountainous areas (Tompkins, 2005). Climate change causes displacement of people in several areas (Jennings, 2008). Climate change affects the distribution and quality of India's natural resources, which will ultimately threaten the livelihoods of the most poor and marginalized sector of the population who are closely tied to India's natural resource base (Arnell, 2004). More than 56% of workers are engaged in agriculture and allied sectors, while many others earn their living in coastal areas through tourism or fishing, indeed most of the poorest people live in rural areas and are almost completely reliant on natural resources for their food and shelter (McMichael, 2002). A variety of (i) Direct (ii) Indirect and (iii) Systemically Mediated health effects have been identified:

- (i) Excessive daily heat exposures create direct effects, such as heat stroke and possibly death, reduce work productivity and interfere with daily household activities. Extreme weather events, including storms, floods and droughts create direct injury risks and follow-on outbreaks of infectious diseases, lack of nutrition and mental stress due to climate change would increase these types of direct health effects.
- (ii) Indirect effects include malnutrition and under nutrition due to failing of local agriculture. Spread of vector-borne diseases and other problems caused by forced migration from affected homes and work places (Hollway and Burby, 1990).
- (iii) Systemic impacts include food crisis, conflicts over access of water, and large – scale adverse economic effects due to reduced human and environmental productivity. Climate conditions have an important role to play all of the health issues.

ADAPTATIONS:

Adaptation is a necessary strategy at all scales to complement climate change mitigation. Adaptation can mitigate the adverse impacts of climate change. Planned adaptation can supplement autonomous adaptation though there are more options and greater possibility for offering incentives in the case of adaptation of human systems than in the case of adaptation to protect natural systems. Long – term planning with adaptation impacts includes the analysis of future coastal flooding risks and banning of new buildings in risk areas. In areas where vector – borne diseases, such as malaria and dengue fever, spread due to changing climate conditions, application of known malaria control methods can be an important

adaptation. The growing threat for natural disasters is another challenge for adaptation (Duus-Otterström, G. and Sverker, 2011; Hales *et. al.*, 2008).

CONCLUSION:

Many police and individual choices have the potential to reduce green house gas emissions and produce major health co-benefits. For example cleaner energy system and promoting the safe use of public transportation and active movement such as cycling or walking as alternatives to using private vehicles – could reduce carbon emission and cut the burden of household air pollution and ambient air pollution. Local authorities are responsible for a range of functions, services and assets that may be affected by climate change. Each community will have its own climate related vulnerabilities and priorities. Adaptation has the potential to reduce adverse effects of climate change but is not expected to prevent all damages. Therefore, early planning for health is essential to reduce, hopefully avoid, near future and long-term health impacts of global climate change. The optimal solution, however, is in the hands of governments, society, and every individual a commitment for a change in values to enable a full transition to sustainable development.

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REFERENCES:

1. **Arnell, N. W. (2004).** ‘Climate change and global water resources, SRES emissions and socio economics scenarios Global Environmental change – Human and policy dimensions 14 (1):31-52.
2. **Duus-Otterström, G. and Sverker C. J. (2011).** 'Why (most) climate insurance schemes are a bad idea', *Environmental Politics*, 20: 3, 322-339
3. **Gamble, J.L., Ebi, K.L., Sussman, F.G. and Wilbanks, T.J. (2008).** Analysis of the effects of global change on human health and welfare and human system. A report by CCSP.
4. **Hales, S., Wet, N. de., Maindonald, J. and Woodward, A. (2002).** Potential effect of Population and climate changes on global distribution of dengue fever, an empirical model. *The Lancet*, 360:830-834.
5. **Hollway, J.M. and Burby, R.J. (1990).** The effects of flood plain development controls on residential land values”. *Land Economics* 66 (3); 259-271.

6. **Jennings, P. A. (2008).** ‘Dealing with climate change at the Local Level; Chemical Engineering Progress 104 (2) : 40-44.
7. **Kjellstrom, T., Butler, A. J. Lucas, R. M. and Bonite R. (2010).** Public health impact of global heating due to climate change – Potential effects on chronic non-communicable diseases. International Journal of Public Health 55: 97-103.
8. **Kjellstrom, T. and McMichael, A.J. (2013).** Climate change threats to population health and well-being: the imperative of protective solutions that will last. Global Health Action: 6:20816.
9. **McMichael, A. J. (2002).** Population environment, disease and survival: Part Patterns uncertain futures, lancet 359: 1145-1148.
10. **Pascuas, M., Ahumada, J. A., Chavel, L. F., Rodox, X. and Bouma, M. (2006).** Malaria resurgence in East African Highlands; temperature trends revisited 103:5829-34.
11. **Rettner, R. (2011).** 5 Ways Climate Change Will Affect Your Health. Live Science <http://www.livescience.com/35635-climate-change-health-countdown.html>.
12. **Tompkins, E. L. (2005).** Planning for climate change in small island, insight from national hurricane prepared net in the cayman Island adaption to climate change perspective accords scales. Glob Environ change 15(2): 139-149.
13. **Woodward, A. (1995).** ‘Doctoring the planet; health effects of global change, Australia and New Zealand Journal of medicine 25(1): 46-53.