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## Climate Change, Health and General Well-being

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**Abstract:** The paper discusses the irreversible change in earth's climate instigated due to anthropogenic activities briefly delving upon the reasons. The changing climate in-turn impacts earth's environment, its ecosystems, as well as the health and well-being of humans. The major impacts on health systems as well as effective food production systems pose serious risk to human existence. The rate of change and its impacts are analyzed and discussed at length leading to conclusion and way forward.

**Keywords:** Climate change, environmental sustainability, human health, disasters

### INTRODUCTION

Man has evolved over thousands of years. From living a nomadic life to settling down in huge groups to building cities and metropolises, he has come a long way in pursuit of a comfortable life. All development has happened with the single aim of living a safe and comfortable life.

The progress and improvement in lifestyle has come with increased demand of energy and more and more uses of natural resources.

The Earth, with its 4 billion years of existence, has been in a state of continuous change that does not disturb the natural balance on the planet. The natural shifts are gradual and hardly noticeable in a lifetime. However, the rate at which man is presently consuming the earth's natural resources and disposing waste is unprecedented. The planet is struggling to keep the balance in hydrological and atmospheric cycles, bringing about changes in climate of the earth at a rate faster than ever before.

As per NASA's GIS report, the average global temperature on earth has been rising at a rate of roughly 0.15 to 0.20°C per decade since 1975. The frequency of extreme weather events has increased in recent years, forests are drying, and ecosystems are changing faster than ever before, leaving little time for species to adapt and therefore, threatening their very existence on the planet.

### UNDERSTANDING CLIMATE CHANGE

Climate change (CC) is affecting all of us in various manners. In order to react and adapt to it, we must understand climate change with its causes and effects.

Although climate and weather are related, they are not interchangeable terms. Weather refers to the immediate condition that can fluctuate rapidly, whereas climate establishes the prolonged characteristics of a location, such as whether it is tropical or temperate. The correlation between weather and climate is vital because weather patterns are reliant on climate. Climate sets the temperature, weather diversity, winter features, precipitation levels, and the nature of weather phenomena, including the intensity of storms. The delicate interplay between climate and weather is the reason why we are confronting high temperatures and more frequent weather extremes and natural calamities due to climate change.

To understand it better, we must understand that a few degrees change in daily temperature or seasons doesn't matter. But, a smallest change in average global temperature can have huge impacts as the global temperature mainly depends on how much energy the planet receives from the Sun and how much it radiates back into space. The energy coming from the Sun fluctuates very little by year, while the

amount of energy radiated by Earth is closely tied to the chemical composition of the atmosphere—particularly the amount of heat-trapping greenhouse gases.

A one-degree global change is significant because it takes a vast amount of heat to warm all of the oceans, the atmosphere, and the land masses by that much. In the past, a one- to two-degree drop was all it took to plunge the Earth into the Little Ice Age.

Climate change is not just rising temperature. It also includes rising sea levels, receding glacier lines, shifting in weather patterns like drought and flooding, and much more. Things that we depend upon and value — water, energy, transportation, wildlife, agriculture, ecosystems, and human health — are experiencing the effects of a changing climate.

## IMPACTS OF CLIMATE CHANGE

Climate affects nearly everything that exists on Earth, from weather and seasons to growth of plants, production of food, soil and water quality, and behavior of various elements in an ecosystem. The system changes in turn impact the activities and health of humans and animals.

### Climate Change and Disasters

Climate change exacerbates disaster risk in a variety of ways. It increases the likelihood, frequency and intensity of climatic hazard events, affecting vulnerability to all hazards due to long term socioeconomic stresses and impacts such as displacement, and altering exposure patterns as climatic conditions change and hazard set emerge in new localities.

The increasing number of reported medium- and large-scale disasters reflects a complex interaction of factors. Population growth and expanded settlements put more people and infrastructure in the path of existing hazards, and there is an increase in frequency and intensity of climatic hazards due to climate change (Van Aalst, 2006; IPCC, 2012, 2014a, 2018a; Otto et al., 2018).

Disaster events reported per year have increased significantly in the last two decades. Between 1970 and 2000, reports of medium and large-scale disasters averaged around 90–100 per year, but between 2001 and 2020, the reported number of such events increased to 350–500 per year. These included geophysical disasters such as earthquakes, tsunamis and volcanoes, climate- and weather-related disasters, and outbreaks of biological hazards including crop pests and epidemics (UNDRR analysis based on the International Disaster Database (EM-DAT; CRED, 2021).

If current trends continue, the number of disasters per year globally may increase from around 400 in 2015 to 560 per year by 2030 – a projected increase of 40% during the lifetime of the Sendai Framework (Figure 2) (UNDRR, 2022). For droughts, there is a large year-on-year variation, but current trends indicate a likely increase of more than 30% between 2001 and 2030 (from an average of 16 drought events per year during 2001–2010 to 21 per year by 2030) (Figure 3). The number of extreme temperature events per year is also increasing; based on current trends, it will almost triple between 2001 and 2030 (Figure 4). (UNDRR, 2022)

This is further substantiated by climate projections, including the scientific evidence provided by the IPCC Sixth Assessment Report that points to increases in heat waves, more intense floods and droughts, and a 7% increase in extreme daily precipitation events to 2030 (Hoesung Lee (Chair), 2023) (IPCC, 2021a).

Based on current trends, the world is set to exceed the Paris Agreement's target of 1.5°C global average maximum temperature increase by the early 2030s, further accelerating the pace and severity of hazard events (IPCC, 2021a).

Figures 2, 3 and 4 are underestimated in that data systems are still not sufficient to capture the large proportion of slow-onset hazards and subnational, localized or small-scale extensive disasters. A staggering 99.7% of all disaster events between 1990 and 2013 were smaller disasters involving fewer than 30 deaths or fewer than 5,000 houses destroyed (UNISDR, 2015). Thousands of these smaller-scale events are unreported every year because they do not generate high impacts at the national or international levels; however, they do bring a constant stream of local losses (UNDRR, 2021a).

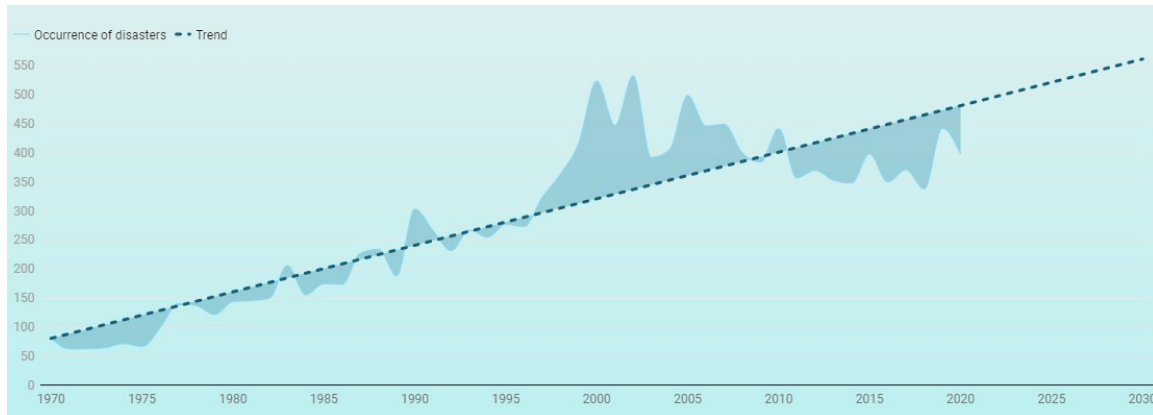


Fig.2: Occurrence of disaster events, indicating a sudden rise in disaster events since the beginning of 21st century.

Source: GAR2022

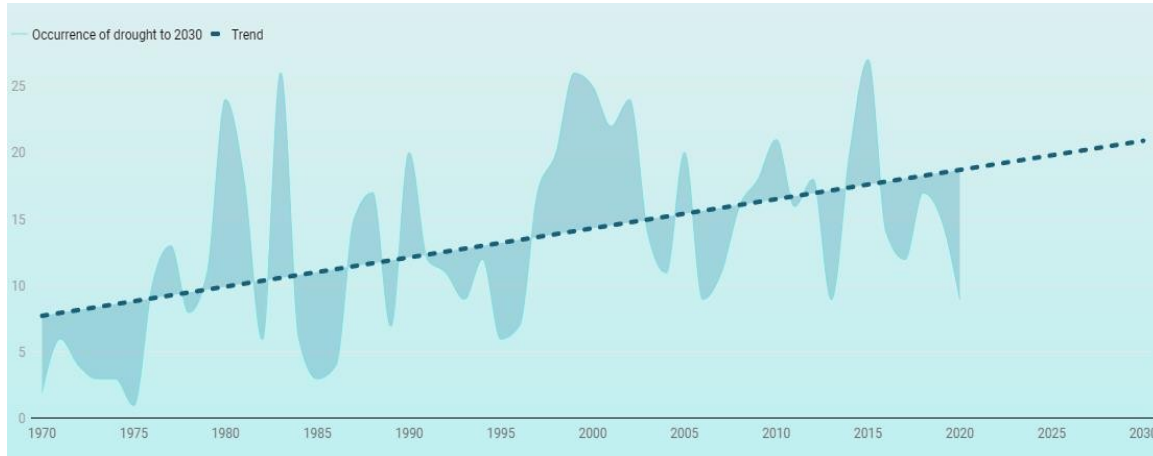


Fig.3: Occurrence of drought events, indicating a rise of

nearly 30% from 2000 to 2030 Source: GAR2022

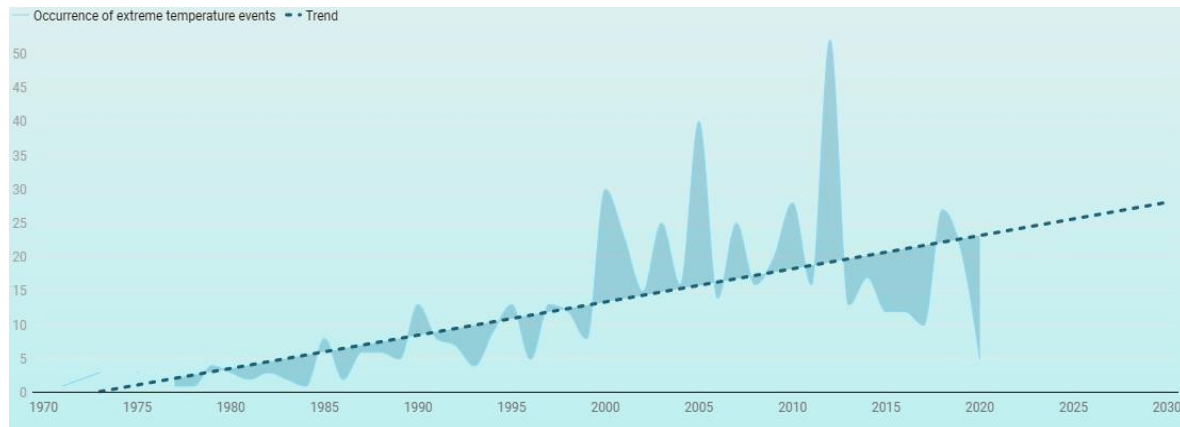


Fig.4: Occurrence of extreme temperature events, indicating a two-fold increase in their occurrences from 2000 to 2030

Source: GAR2022

### Effects of Climate Change on Humans

By 2017, over half of the world's population (56%) was living in urban areas—increasingly in highly dense cities (United Nations Population Division, 2018; World Bank, 2022).

A quarter of the world's urban population lives in informal settlements in conditions of poverty (Figure 2.18). About 1 billion people in developing countries are vulnerable to disasters because they live in congested, poorly built houses with high levels of exposure and without adequate emergency services or coping capacities (United Nations Population Division, 2018; World Bank, 2022).

Rapid urbanization is making people more vulnerable to the impacts of climate change, in part due to the concentration of large cities in coastal areas subject to the impacts of sea-level rise. Sea levels rose on average 1.3 mm per year between 1901 and 1971, but since 2006, that rate has increased to 3.7 mm per year (IPCC, 2021a). It is projected that by 2100, 200 million people in the world will be affected by sea-level rise, with most of those in Asia, in particular China (43 million), Bangladesh (32 million) and India (27 million) (Robert B. Nolanda, 2019).

The most optimistic poverty headcount scenarios predict that, compared with 2020, an additional 37.6 million people will be living in conditions of extreme poverty due to the impacts of climate change by 2030. Under the "worst-case" or no action scenario, climate change will push an additional 100.7 million into poverty by 2030 (Bramka Agra Jafino, 2020).

According to the INFORM Natural Hazard Risk Index, most of the countries that face high disaster risk are also those with a high share of population living under the national poverty line. Among the top 20 countries, 90% are middle- and lower-income countries with an average national poverty rate of 34% (European Commission, 2021). This compares to less than 0.5% for the countries at the opposite end of the risk scale. For such high-risk and high-poverty countries—which generally fall into the low-income category—disaster impacts can lead to income and consumption shortfalls, negatively affect welfare and cause major setbacks in human and economic development, with long-term consequences.

Within high-risk countries, a higher percentage of poor households are exposed to disasters compared with non-poor households. For example, after Cyclone Aila hit Bangladesh in 2009, 25% of poor households were exposed to its impacts, compared to only 14% of non-poor households (Sonia Akter,

2013). In many developing nations, the higher share of poor households exposed to floods is concentrated in urban areas, as land scarcity is pushing poor populations to settle in higher-risk areas.

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### **Climate-sensitive health risks**

The World Health Organization (WHO) calls climate change the biggest health threat facing humanity, and health professionals worldwide are already responding to the health harms caused by this unfolding crisis.

The Intergovernmental Panel on Climate Change (IPCC) has concluded that to avert catastrophic health impacts and prevent millions of climate change-related deaths, the world must limit temperature rise to 1.5°C. Past emissions have already made a certain level of global temperature rise and other changes to the climate inevitable. Global heating of even 1.5°C is not considered safe, however; every additional tenth of a degree of warming will take a serious toll on people's lives and health.

The climate crisis threatens to undo the last fifty years of progress in development, global health, and poverty reduction, and to further widen existing health inequalities between and within populations. It severely jeopardizes the realization of universal health coverage (UHC) in various ways – including by compounding the existing burden of disease and by exacerbating existing barriers to accessing health services, often at the times when they are most needed. Over 930 million people – around 12% of the world's population – spend at least 10% of their household budget to pay for healthcare. With the poorest people largely uninsured, health shocks and stresses already currently push around 100 million people into poverty every year, with the impacts of climate change worsening this trend.

Climate change is already impacting health in a myriad of ways, including by leading to death and illness from increasingly frequent extreme weather events, such as heatwaves, storms and floods, the disruption of food systems, increases in zoonoses and food-, water- and vector-borne diseases, and mental health issues. Furthermore, climate change is undermining many of the social determinants for good health, such as livelihoods, equality and access to health care and social support structures. These climate-sensitive health risks are disproportionately felt by the most vulnerable and disadvantaged, including women, children, ethnic minorities, poor communities, migrants or displaced persons, older populations, and those with underlying health conditions.

The scientific advances progressively allow us to attribute an increase in morbidity and mortality to human-induced warming, and more accurately determine the risks and scale of these health threats.

In the short- to medium-term, the health impacts of climate change will be determined mainly by the vulnerability of populations, their resilience to the current rate of climate change and the extent and pace of adaptation. However, in the long run, the impacts will increasingly hinge on the degree to which significant measures are implemented promptly to lower emissions, prevent the surpassing of dangerous temperature limits, and avoid irreversible tipping points (WHO, 2021).

As/ WHO report, between 2030 and 2050, climate change is expected to cause approximately 250,000 additional deaths per year from malnutrition, malaria, diarrhoea and heat stress alone. The direct damage costs to health are estimated to be between US\$ 2–4 billion per year by 2030. Areas with weak health infrastructure – mostly in developing countries – will be the least able to cope without assistance to prepare and respond.

### **Alarming trends –growing economic cost of disasters**

While the economic impact of geophysical disasters has remained stable over recent decades, annual economic loss from climate- and weather-related events has risen significantly since the 2000s, in line with their amplified intensity and frequency.

Low-income and lower middle-income countries lose on average 0.8–1% of their national GDP to disasters per year, compared to 0.1% and 0.3% in high-income and upper middle-income countries, respectively.

### **Conclusion**

Risk creation is outstripping risk reduction. Disasters, economic loss and the underlying vulnerabilities that drive risk, such as poverty and inequality, are increasing just as ecosystems and biospheres are at risk of collapse. Global systems are becoming more connected and therefore more vulnerable in an uncertain risk landscape. COVID-19 spread quickly and relentlessly into every corner of the world, and global risks like climate change are having major impacts in every locality. Indirect, cascading impacts can be significant.

The risk will continue to grow. The best defense against systemic risk is to transform systems to make them more resilient. Without increased action to build resilience to systemic risk, the SDGs cannot be achieved. Investment (both monetary and intellectual) in understanding risk is the foundation for sustainable development. However, this needs to link to reworking of financial and governance systems to account for the real costs of current inaction to address risks like climate change. Without this, financial balance sheets and governance decision-making will remain fragmented and be rendered increasingly inaccurate and ineffective.

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