ISSN- 0301-1216
Indian J. Prev. Soc. Med. Vol. 53, No.4 2022

EDITORIAL

Climate Change and Public Health – If not now, never?

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Why this article?

How many of us being public health personnel are aware of climatic change and its impacts on human health? In this rapidly growing modern world of science, multiple pieces of evidence confirm the varied and substantial effects of climate change on human health and well-being and the beneficial effects of the mitigation measures on public health[1,2]. Anthropogenic activities have caused enough damage to mother nature, making many parts of the earth unsuitable for human life. Climatic change has influenced human lives and health throughout the last several decades, causing extreme weather and climate events, changes in labor capacity, food security, and the incidence and geographical distribution of infectious illnesses around the world. The stress created by the COVID-19 Pandemic on healthcare still worsened the condition and clearly outlined the low resilience of our first line of defense, the healthcare settings. Climate change is literally a knife hanging over our heads. Despite its profound ill effects on human health, not only common people, even stakeholders of many countries are still ignorant. Health professionals can become trusted advocates for global efforts to cut emissions and protect people from the threat of climate change. Our advocacy must be acknowledged across the political spectrum and tailored to local political, social, and cultural realities[3]. The prime aim of this article is to sensitize our fraternity regarding the impacts of climate change & fierce of urgency to act.

Who are the major stakeholders?

Global:

The UN Framework Convention on Climate Change (UNFCCC) – is a nodal agency headed by the Secretary-General of the United Nations formed to combat "dangerous human interference with the climate system". It sets out the basic legal framework and principles for international climate change cooperation with the aim of stabilizing atmospheric concentrations of greenhouse gases (GHGs).

The Intergovernmental Panel on Climate Change (IPCC) – is an intergovernmental organisation of UN, established in 1988 to provide the stakeholders & policy makers with scientific data regarding current climate state. Its parent organizations are World Meteorological Organization; (WMO) & United Nations Environment Program (UNEP).

Conference of the Parties (COP): The COP is the Convention's highest decision-making body. All Parties to the Convention are represented at the COP, where they review the implementation of the Convention and any other legal instruments adopted by the COP and make decisions necessary to promote the effective implementation of the Convention, including institutional and administrative arrangements. Until now 27 COPs have been conducted each posing its own importance. Very recent one (COP 27) which gained a world attention was held from 6 November until 20 November 2022 in Sharm El Sheikh, Egypt.

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Submission	11.10.2022	Revision	03.11.2022	Accepted	15.12.2022	Printing	30.12.2022

Prior Publication*: Nil*; Source of Funding:* Nil; *Conflicts of Interest*: None , *Article # 519/1079

India:

The Ministry of Environment, Forest and Climate Change (MoEFCC) – is a nodal agency responsible for planning, promotion & implementation of India's environmental policies including international negotiations.

Deepening Burden/Impacts

First how do we quantify?

Unless we quantify the impacts, its far beyond to think about mitigation & adaptation measures. But how we will quantify? We need a common tool to measure the damage occurred worldwide especially in terms of human health & well-being. As the scientific evidence regarding linkages between climate change & health grow day by day, the demand for a such feasible tool which can guide the mitigation & adaptation strategies also increases. Climate-health relationships are complicated, with numerous interactions, synergies, and feedback loops. Understanding their properties and linkages is difficult, and the amount of complexity involved makes the development of such tools far-fetched. There came a solution – ***Lancet Countdown Climate Change Impacts, Exposures, & Vulnerability Indicators (CCIEVIs).*** They were created to track the health effects of anthropogenic climate change, their patterns, and the extent to which progress (or backsliding) occurs over time. They are provided chronologically up to the year for which the most recent comprehensive data are available[4]. Some of the major findings of Lancet Countdown 2022 will be discussed here to show the urgency to act.

Lancet Countdown 2022 CCIEVIs[5]

Extreme Climate & Health

- Heat exposure resulted in the ***loss of 470 billion potential labor hours*** in 2021, a 37% increase from 1990 to 1999, with the agricultural industry victimizing 87% of the losses in low HDI nations.
- Children under the age of one experienced ***600 million additional person-days of heatwaves*** from 2012 to 2021, while adults over the age of 65 experienced 31 billion more than from 1986 to 2005.
- Between 2000-04 and 2017-21, ***heat-related mortality*** for persons over the age of 65 increased by nearly ***68%.***
- From 1951-60 to 2012-21, the climatic suitability for ***dengue transmission rose*** by 11.5% for Aedes aegypti and 12% for Aedes albopictus. In comparison to 1951-60, the transmission of ***chikungunya*** by A albopictus increased by 12%, while the transmission of ***Zika*** by A aegypti increased by 12.4%.
- From 1951-60 to 2012-21, the length of the ***malaria transmission*** season grew by 31.3% in America and 13.8% in Africa's highlands.
- In 2012-21, ***intense drought*** impacted ***29% more*** geographical land area for at least one month each year than in 1951-60.
- Heatwave days were associated with 98 million more people reporting ***moderate to severe food insecurity*** in 2020[5].

Economic Losses[5]

- In 2021, extremely high HDI nations accounted for almost ***84%*** of worldwide economic losses caused by climate-related severe events, more than double the global average cost as a percentage of GDP.
- In 2021, the monetized value of worldwide heat-related mortality was expected to reach ***US$144 billion***, equal to the average income of 12.4 million individuals.

- In 2021, the global potential loss of income from reduced labor capacity due to excessive heat was ***US$669 billion.***
- The monetized costs of early death due to air pollution were ***US$2.3 trillion*** in 2020, equivalent to 27% of the global GDP.

This section explains the necessity of accelerating mitigation and adaptation to stop the catastrophic health effects of a warming world, with the world expected to warm by *2.4–3.5°C by 2100.*

Climate change - the biggest health threat facing humanity

Climate change is predicted to result in an additional 250 000 deaths per year between 2030 and 2050, mostly from starvation, malaria, diarrhea, and heat stress. The current health inequalities between and among communities could be made even worse by the climate issue, which poses a danger to the last fifty years of advancement in development, global health, and poverty reduction[6]. Since its inception (1972) i.e., 50 years, United Nations Environment Program (UNEP) has been working earnestly to limit & reverse the anthropogenic climate adverse changes which will lead to a sustainable global environment.

The UN Framework Convention on Climate Change (UNFCCC), in which nations vowed to stop severe anthropogenic climate change and its detrimental impacts on human health and welfare, celebrated its 30th anniversary in 2022. However, very few meaningful actions were taken & the countries have failed to keep up the multilateral negotiations, which ultimately lead climate change to grow out of the hand to be named the biggest health threat facing humanity by WHO. Even now after witnessing the devastating effects of climate change on human health, countries majorly depend upon fossil fuels as a source of energy[5]. After 30 years of UNFCCC negotiations, countries and companies continue to make choices that threaten the health and survival of people worldwide. It would be a right time to discuss major mitigation negotiations made by global stakeholders.

Kyoto Protocol

On December 11, 1997, the Kyoto Protocol was formally adopted. It took a while for ratification, and on February 16th, 2005, it became effective. According to *"common but differentiated responsibility and respective capabilities,"* it only binds 37 industrialized nations and sets a greater burden on them because it acknowledges that they are mostly to blame for the current high levels of GHG emissions in the atmosphere.

37th Industrialized Nations, Economies in transition, and the European Community agreed to reduce GHG emissions by an average of 5% from 1990 levels during the first commitment period. In the eight-year period between 2013 and 2020, known as the second commitment period, Parties agreed to cut GHG emissions by at least 18% below 1990 levels. However, this commitment period's Parties were different from the first commitment period *(Doha Amendment – COP 18)*[7]

The Paris Agreement

It is a historic international agreement that was adopted by nearly every country in 2015 to combat climate change and its detrimental effects. The pact seeks to significantly cut global greenhouse gas emissions in an effort to keep the increase in global temperature this century to 2 degrees Celsius over preindustrial levels, while also researching methods to keep the increase to *1.5 degrees*. All major emitting nations have agreed to reduce their climate pollution and to make those commitments stronger over time as part of the accord[8].

The Paris Agreement's implementation necessitates economic and social transformations based on the best available science. The Paris Agreement is based on a five-year cycle of increasingly ambitious climate action by countries. Countries must submit their climate action plans, known as nationally determined contributions, by 2020. (NDCs). In their NDCs, countries communicate actions they will take to reduce their Greenhouse Gas emissions in order to reach the goals of the Paris Agreement.

Lag in Emission Cuts

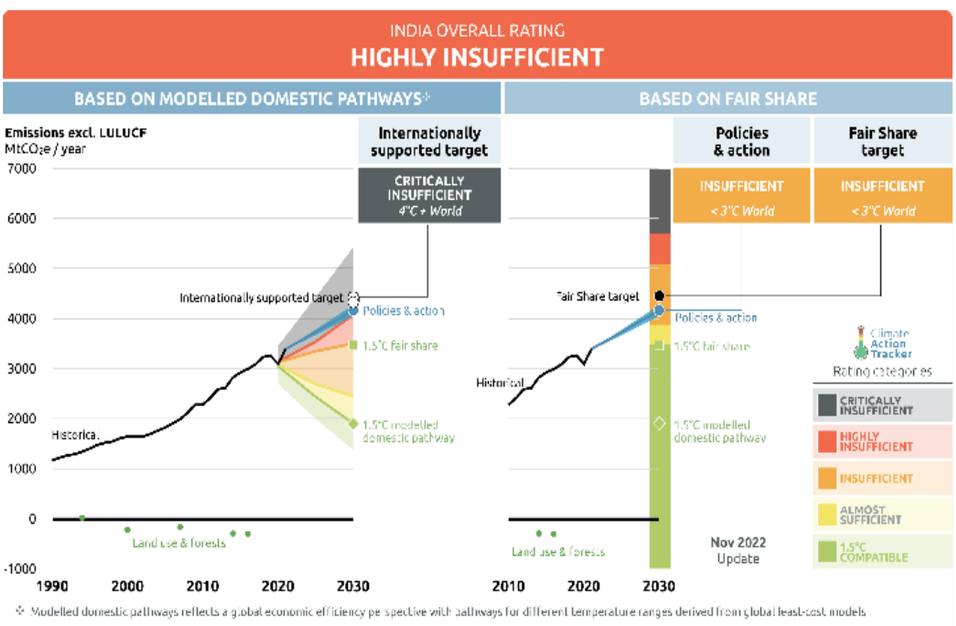
The Emission Gap Report 2022 reveals that we are far from the Paris Agreement target of limiting global warming to far below 2°C, preferable 1.5°C, and that updated national pledges made since COP26, held in Glasgow, UK, in 2021, have little impact on estimated 2030 emissions. Policies currently in place point to a 2.8°C temperature rise by the end of the century. Implementation of the current pledges will only reduce this to a 2.4-2.6°C temperature rise by the end of the century, for conditional and unconditional pledges respectively.

The report concludes that only an immediate system-wide transformation can yield the significant reductions in greenhouse gas emissions necessary to limit them by 2030: 45% compared with estimates based on present policies to get on track to 1.5°C and 30% for 2°C[9].

Ray of Hope

Even while the amount of clean energy produced overall is still insufficient, it reached record high levels in 2020, and in the year 2021, over 80% of electricity generation investments came from carbon-free sources. Despite accounting for 5.2 percent of all global emissions, the health sector has showed substantial climate leadership, and as of July 2022, 60 nations had committed to implementing low-carbon or net-zero carbon health systems as part of the COP26 Health Programme.

Criticism on India's Climate Change Strategies



India presented its Long-term Strategy for Low Carbon Development (LTS) at COP27. This document breaks down activities by sector but only covers current policies and a broad course for the future. India intends to keep developing coal in the long run based on its LTS. Overall, there is very little information supplied, and there is no emissions pathway showing how India can achieve net zero emissions by 2070. It is still unknown. if India's goal of reaching net zero greenhouse gas emissions by 2070 applies to all greenhouse gas emissions or only CO_2. The Climate Action Tracker (CAT) rates India's LTS as ***"Poor".***

India declared revised goals at COP26 in November 2021 and formally filed its amended NDC plans in August 2022. In comparison to its first NDC, it raised the significance of both its 2030 emissions intensity target and the percentage of electricity that will come from non-fossil fuel sources. Even while the targets *appear more ambitious on paper*, India will already meet them with its present level of climate action, thus the new targets won't result in further cuts to emissions. However, India's NDC rating against its fair contribution to the 1.5°C temperature limit has increased by one category to ***"Insufficient"***, but the country's total CAT rating has remained unchanged at ***"Highly insufficient"***[10]**.**

Importance of "Environmental Literacy"

Everyone perceives anthropogenic climate change as a matter of international concern & only the global stakeholders play a important role. But the major issue in this crucial stage mandating urgent action is the above-mentioned misconception. In fact, the importance of **environmental literacy** has been always undermined.

What is this environmental literacy? - Educating citizens, especially children, and raising their awareness regarding the causes and consequences of climate change. The success of all the governmental initiatives is largely dependent on environmental literacy drives among populations that are often strangers to these major political agreements, and on the development of a culture of care for the climate. Especially it is very crucial to educate our children which ensure our future generation will choose a environment friendly lifestyle.

Conclusion

It would be great blunder if we, public health experts who have responsibility of spreading awareness about climate change and its ill impacts on human health lack required knowledge that too in this crucial phase. So, prime aim of this article is to sensitize doctors especially who work in public health domain regarding climate change. I, hope I justified the same. This article gives just an overview, but lays a foundation upon which readers could explore more & build more concepts.

References

1. Haines A. Health co-benefits of climate action. The Lancet Planetary Health. 2017 Apr 1; 1(1):e4–5.
2. West JJ, Smith SJ, Silva RA, Naik V, Zhang Y, Adelman Z, et al. Co-benefits of Global Greenhouse Gas Mitigation for Future Air Quality and Human Health. Nat Clim Chang. 2013 Oct 1;3(10):885–9.
3. Maibach E, Miller J, Armstrong F, El Omrani O, Zhang Y, Philpott N, et al. Health professionals, the Paris agreement, and the fierce urgency of now. The Journal of Climate Change and Health. 2021 Mar 1;1: 100002.
4. Di Napoli C, McGushin A, Romanello M, Ayeb-Karlsson S, Cai W, Chambers J, et al. Tracking the impacts of climate change on human health via indicators: lessons from the Lancet Countdown. BMC Public Health. 2022 Apr 6; 22: 663..

5. The 2022 report of the Lancet Countdown on health and climate change: health at the mercy of fossil fuels - The Lancet [Internet]. [cited 2022 Dec 5]. Available from: https://www.thelancet.com/journals/lancet/ article/ PIIS0140-6736(22)01540-9/fulltext

6. Climate change and health [Internet]. [cited 2022 Dec 4]. Available from: https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health.

7. What is the Kyoto Protocol? | UNFCCC [Internet]. [cited 2022 Dec 5]. Available from: https://unfccc.int/ kyoto_protocol.

8. February 19, Denchak 2021 Melissa. Paris Climate Agreement: Everything You Need to Know [Internet]. NRDC. [cited 2022 Dec 9]. Available from: https://www.nrdc.org/stories/paris-climate-agreement-everything-you-need-know.

9. Environment UN. Emissions Gap Report 2022 [Internet]. UNEP - UN Environment Programme. 2022 [cited 2022 Dec 5]. Available from: http://www.unep.org/resources/emissions-gap-report-2022.

10. India [Internet]. [cited 2022 Dec 11]. Available from: https://climateactiontracker.org/countries/india.

Citation: Kumar Pragya, Ahmad S, KG Naveen . Climate change and public health – If not now, never?. Indian J Prev Soc Med, 2022; 53 (4): 228-233.