

# Thinking Through Climate Change & Health Post-COP21



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## Introduction

December 8, 2015, global leaders of government, business, and civil society met to discuss global climate change at the Conference of Parties (COP) 21 at Stade de France in Paris (Tomlinson, 2015). These negotiations yielded the first global agreement on carbon-emission reduction since the beleaguered Kyoto Protocols were adopted in 1997 by many countries around the world. In retrospect, Kyoto is now viewed as a failed global intervention, doing too little, too late (Najam et al., 2003; Prins & Rayner, 2007). The jury is still out on the Paris agreement, but critics have openly critiqued the agreement as inadequate, lacking clear language around the protection poor and otherwise vulnerable populations. At the center of these criticisms is an increasing awareness among climate change activists about the impacts of climate on human health, wellbeing, and livelihood. But what exactly is climate change? And what are the pathways through which it affects human health? The following sections will provide an explanatory framework that is useful in understanding this phenomena, as well as necessary context for understanding global efforts to abate global warming.

## Global Climate Change

When the media or experts talk about climate change, they are specifically referring to the impacts of increased

concentrations of greenhouse gases, including carbon dioxide (CO<sub>2</sub>) and methane (CH<sub>4</sub>). Research has revealed that cyclical climate changes are a natural part of Earth's ecological history. However, climate scientists have identified a clear relationship between current patterns of climate change and dramatic technological shifts in human societies. Specifically, the industrial revolution, the massification of fossil-fuel-based modes of transportation, and the advent of factory farms have all been tied to human-induced climate change. Human greenhouse emissions are expected to continue to grow with global population expansion and changing expectations around standards of living.

Climate change scientists have developed formulas that explain the impacts of these increases in greenhouse gas emissions. Analyzing historical data, climate scientists estimate that global temperatures raised 0.74 oC over the last century (IPCC SYR, 2007). These same formulas have been used to project the future trajectory of climate change. These projections anticipate anywhere within the range of 1.1 oC –6.4 oC by 2100, the lower figures assume aggressive global efforts to reduce greenhouse gas emissions, while the higher projections anticipate inaction or growth in climate change impacting activities (Legget, 2008). To put these numbers in perspective, climate experts have criticized the proposed mitigation efforts of the COP21 Paris agreement as only leading to a 0.2 oC reduction in global temperatures.

Global mitigation efforts, which many climate scientists view as inadequate, are taking place against a rather grim backdrop. During the last few decades, sea levels have risen 1.8 and Arctic sea ice has shrunk approximately 2.7% each decade (IPCC SYR, 2007). Climatic changes have already dramatically affected atmospheric conditions and ecosystems across the world. Researchers note the human impacts of desertification in northern Africa, water scarcity and draught throughout much of the Eastern Mediterranean,

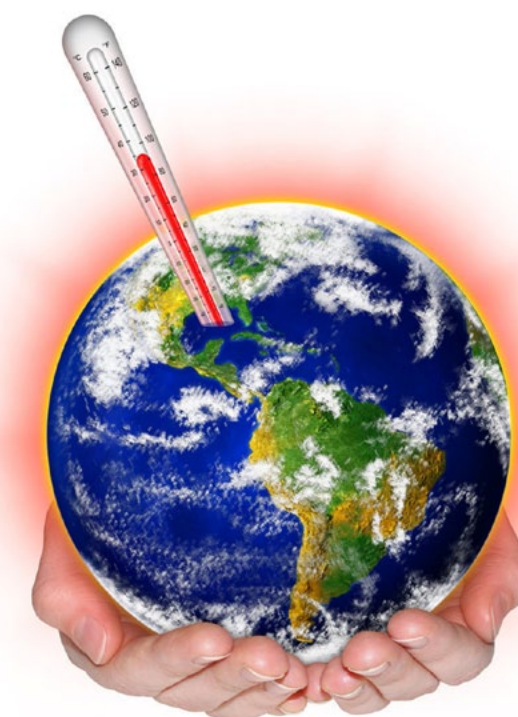
reduced precipitation and increasing temperatures in Latin America (Bizikova et al., 2009; Dube et al., 2016; IPCC, 2014). These climactic changes have strained agricultural industries and contributed to armed conflicts and mass migrations, undermining regional stability and the basic conditions for human thriving.

## Impacts on Human Health

The social, political, and economic impacts of climate change that are touched upon above have cumulative effects on human health. There are also ecological pathways through which climate change affects human health. Direct climatic causes of sickness and death (e.g., hurricanes, droughts, floods, and heat waves) are expected to increase. Meanwhile, changing temperatures and weather patterns will affect the areas impacted by disease-carrying insects, increase food- and water-borne diseases, and result in poor air quality and food insecurity. The impacts of climate change are expected to fall unevenly across countries and regions, and will most greatly affect the poor and vulnerable, including babies and infants, as well as the elderly and infirmed (Johnson et al, 2005).

In 2000, researchers estimated the cumulative impact of climate change to result in approximately 160,000 deaths and 5 million illnesses each year (Mc Micheal, 2011). The World Health Organization expects the death toll to double by 2020, especially impacting Africa, the Indian subcontinent, and Southeast Asia. There, public health experts expect increasing rates of malnutrition, diarrhea, malaria, heat waves, and floods. Still, even subtle, gradual climatic changes can damage human health. For example, asthma prevalence in the United States has quadrupled over the last two decades (Epstein, 2005). There have also been increased global incidence of respiratory illness as a result of dust clouds and sandstorms as a result of desertification—the expansion of deserts—in Africa and elsewhere.

Heat waves have become the most visible reminder of global climate change to Westerners, who are less directly impacted by the catastrophic ecological changes described above. Rather, cities in Europe and the United States have struggled with increased incidents of heat stress or hypothermia, as well as higher rates of respiratory and heart diseases. Research into mortality rates show that on extremely hot days, more people die, especially among very young and very older urban dwellers. The 2003 European heat wave was the most dramatic example of



this phenomena, where daily temperatures were 10°C above their average, and approximately 35,000 people died across the continent (Larsen et al., 2003; Johnson et al., 2005)

## Challenges and Opportunities

Despite overwhelming evidence and a consensus in the scientific community regarding climate change, there remains several key challenges in reducing global greenhouse gas emissions (Biesbroek et al., 2013). For one, there are numerous opponents of progressive climate change policies with diverse interest-based perspectives. Loudest among the opponents are climate change skeptics whose voices have been bankrolled and amplified by corporate interests groups, such as fossil fuel companies and other industrial sectors, which stand to lose considerably if strict global regulations are established. Another formidable opponent are governments, who themselves have lobbied extensively for language that favorably impacts national interests while eschewing global concerns. Additional challenges are present in our everyday lives, as our own behaviors—reliance on cars, consumer culture, wastefulness—contribute to unsustainable societal practices.

Not every climate change adaptation strategy has had positive results. For example, efforts to promote biofuels



as a fossil fuel alternative led to dramatic increases in food costs and insecurities. Past failures have drawn attention to the need for multidimensional strategies that are considerate of public health. A more successful climate change adaptation model forwards carbon reduction policies that have ancillary benefits, or co-benefits (Younger et al., 2008). To give an example, governments have encouraged household solar energy outfitting through tax credits and other forms of financial incentive (Cinq-Mars, 2006). With clear climate change benefits, the consumer is sold on long-term cost savings and businesses gain new customers.

Influencing consumer behavior may be easier to realize than change to national or global economic and development policies and practices. The COP21 Paris was both a demonstration of international solidarity on climate change mitigation and a reminder of the failures and limitations of the international response to climate change. We as a scientific and professional community must build on these successes and drive forward with renewed vigor the need for more aggressive climate change mitigation policies. The impacts of climate change are not theoretic or insignificant. Rather, they have already dramatically affected the Earth's ecology and human landscape. As health professionals, we have unique insights into how climate change has and will affect our world. Our voices and efforts today are needed to safeguard future generations.

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