2009

The International Response to Climate Change: An Agenda for Global Health

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302 JAMA 1218-1220 (2009)
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http://jama.ama-assn.org/cgi/content/full/302/11/1218

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The International Response to Climate Change
An Agenda for Global Health

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The most important global response to climate change—the Kyoto Protocol of the United Nations Framework Convention on Climate Change (UNFCCC)—is widely seen as a failure. Its greenhouse gas (GHG) emission target (a collective GHG reduction of 5.2% among industrialized countries compared with 1990 levels) was too low to make a significant difference; the treaty exempted highly populous transitional countries such as China and India; and the United States failed to ratify. President Obama has promised a dramatically different path based on steeper GHG reductions and leadership in global governance.

The international community is focused principally on mitigation—actions taken to reduce emissions and increase sinks of GHGs to avoid harmful climate change. The Kyoto Protocol expires in 2012, and the UNFCCC member states have begun the arduous process of negotiating a new emissions reduction regime, with a basic negotiating text now circulating (available at http://unfccc.int/resource/docs/2009/awglca6/eng/08.pdf) and a conference of parties scheduled to convene in Copenhagen in December 2009. Even the more ambitious mitigation targets currently under negotiation, however, will not be sufficient to avoid a profound effect on the public's health in coming decades, with the world's poorest, most vulnerable populations bearing the disproportionate burden.

The influence of historic and current emissions will be so substantial that it is imperative to reduce global emissions while at the same time preparing for the effects. Recently, the UNFCCC has begun to turn its attention to adaptation—changes to human systems to ameliorate the consequences of climate change. As transitional countries have begun to play a critical role in UNFCCC negotiations, attention is turning to an innovative new fund to provide assistance for adaptation in the world's poorest countries.

This Commentary proposes a new agenda for mitigation as well as adaptation approaches that emphasize the considerable health effects.

The Systemic Health Effects of Climate Change
Scientific consensus exists that climate change is anthropogenically forced, with effects on ecological systems and human health already in evidence. Systemic effects include increasingly intense and more frequent natural disasters such as tropical storms, floods, heat waves, droughts, and wildfires resulting in injury, disease, and mass dislocations to unsanitary shelters. Although the causal relationship between climate change and particular disasters is difficult to establish, the heat wave in Europe (2003), the flooding in Mumbai (2005), and Hurricane Katrina in the United States (2005) are indicative of events likely to occur more often in the future.

Climate change creates fertile conditions for, and alters the geographic range of, disease vectors and carriers such as mosquitoes, ticks, and rodents, bringing them into greater contact with human populations naive to the diseases they carry. Malaria, for example, is expected to move to higher altitudes and dengue to move farther north. Scientists also anticipate increases in food- and water-borne illnesses, which thrive in warmer conditions.

Climate change also affects air quality, particularly in urban environments, as increased temperatures exacerbate air pollution, especially ground-level ozone and particulate matter. Increasing temperatures and higher concentrations of CO₂ will also increase the concentration of allergenic aero-pollens. The effect of climate change on air quality will add to the burden of respiratory and cardiovascular diseases, particularly among chronically ill individuals, such as those with asthma.

Climate change is particularly devastating for human health because of its effects on scarcity of clean water for drinking, sanitation, and crop irrigation. Scarcity of clean water will dramatically increase diarrheal illnesses, already among the leading causes of death among children in the developing world. Ecosystem changes and water scarcity will also impair crop, livestock, and fisheries yields, leading to...
Food shortages with increased hunger and famines. Climate change is expected to play a major role in putting much of Africa under severe water stress as soon as 2020. These catastrophic events may result in economic instability, mass migrations, civil unrest, and armed conflict in a time of competition for increasingly scarce resources.

The effects of climate change will be experienced in every region but will disproportionately burden the global poor, exacerbating global health disparities. The poor, particularly in southern regions, are more vulnerable to climate change. These disadvantaged populations already live on the edge, with extreme scarcity of clean water and nutritious food, as well as high rates of endemic and epidemic infectious disease. The world’s poorest and least healthy populations also have the least capacity to ameliorate the potentially devastating effects of climate change. They have weak health systems, poor infrastructures, and less technological and manufacturing capabilities to adapt to rapidly changing weather conditions. Climate change, therefore, not only challenges the international community to find solutions to reduce the health effects but also to address the inevitable questions of global social justice.

**An Agenda for Global Health**

Political leaders negotiating new responses to climate change face daunting challenges such as the target for GHG reductions, whether targets should apply to developing countries, and how to finance adaptation in poor states. Beyond these challenges lies the deeper issue of how mitigation and adaptation strategies will affect the health of the world’s population, particularly the global poor.

**Focus Acceptable Mitigation Targets on Health Effects.** The UNFCCC negotiations are focusing on the wrong effects and outcomes in attempting to negotiate acceptable climate change mitigation targets. The goal most widely accepted is an average temperature increase of 2°C above preindustrial levels. Some groups, led by small island developing states, have called for a 1.5°C target. In contrast, less ambitious emissions reduction targets advocated by some industrialized countries are likely to put the world on track for an increase of approximately 3°C to 5°C. The debate is currently driven by a focus on the sea level rise associated with each of these scenarios, which in turn is tied to the sovereignty concerns of small island states that would be decimated by a global temperature increase of even 2°C. Rather than confining climate change to a coastal issue, it would be more productive to refocus the debate on broader health effects likely to be seen under each of these scenarios. A difference of 1°C in the global average temperature increase could be the difference between a 10% and a 40% reduction in crop yields, between a 16% and a 23% increase in malaria exposure in Africa, or between 1 billion and 4 billion additional individuals experiencing severe water shortages.

**Incorporate Land-Use and Agricultural Mitigation Approaches.** Currently, mitigation approaches overwhelmingly favor GHG emission reductions from the transportation, energy, and industrial sectors in industrialized countries. This largely ignores the huge mitigation potential of more sustainable agricultural and land-use practices in developing and rapidly industrializing countries, which offers a unique opportunity to realize co-benefits for health. Avoiding deforestation and degradation and introducing sustainable agricultural practices increase resilience to the health effects of climate change and provide more immediate co-benefits for health by protecting populations from extreme weather events, reducing risk of infectious disease, and improving air, soil, and water quality. Because these sectors are low-cost reducers of atmospheric GHG concentration, incorporating them into a cap and trade regime may effectively subsidize more sustainable land use in the developing world. At a minimum, expansion of the UNFCCC’s Clean Development Mechanism would allow developing countries to benefit from offsetting GHG emissions in industrialized countries with cost-effective, sustainable land-use and agriculture practices.

**Fully Fund Adaptation Projects as a Global Priority.** The Adaptation Fund recently established by the UNFCCC could be groundbreaking in the level of assistance it offers to developing countries for climate change adaptation. The fund’s financing mechanism relies on a 2% levy on Clean Development Mechanism projects undertaken in developing countries by industrialized countries seeking to offset their own emissions, rather than on voluntary contributions by donor countries. Financing the fund could be expanded as part of future negotiations. Wealthy countries, however, are fighting expansion, arguing that any adaptation funding should be part of Official Development Assistance commitments, which historically have been woefully insufficient to meet health needs in poor countries. Fully funding climate change adaptation would allow for exactly the kind of projects global health advocates have been urging for decades—capacity for disease surveillance and response, sanitation, food and water security, and capabilities for natural disaster preparedness and response.

**The Way Forward**

Health concerns should play a crucial role in the resolution of these key debates in UNFCCC negotiations, but it is by no means certain that they will. Environmental governance structures have largely failed to include health advocates and policymakers in a coordinated response to climate change. Although global health advocates understand the importance of climate change as one among many transboundary health concerns, they have not delved into the potential of environmental policy as a potent tool for promoting health. The relationship between climate change and global health is unmistakable. This is a critical time for public health advocates to demand that political leaders safe-
guard the health of the world's population, with particular attention to the survival needs of the most disadvantaged.15

Financial Disclosures: None reported.

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