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The reality in the South is quite different: climate change has primarily come to be seen as a human welfare problem . . . . The harm is against humans, it is largely other-inflicted, and it is not life-style-, but life-threatening.

I. INTRODUCTION

It would be difficult to overstate the relevance of global climate change to the projects of the emerging field of global health law. In coming decades, mutually reinforcing trends of population growth, environmental degradation, and global climate change will make the work of ensuring the conditions required for people to be healthy monumentally more difficult. At the same time, the discipline of global health law is extremely relevant to the international response to climate change that is currently gaining prominence on the world stage under the auspices of the United Nations Framework Convention on Climate Change (UNFCCC). The relationship between climate and health is highly relevant to two distinct types of policy responses currently under negotiation. First, efforts to lessen the extent of climate change through reductions in atmospheric greenhouse gas concentrations (“mitigation” in the language of the climate community) can have significant co-benefits for health that might serve as additional political motivation for taking action. Second, the climate-health

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nexus is extremely important to the work of preparing human systems to handle the impacts of climate change ("adaptation" in the language of the climate community). Several scholars of law, policy, and health sciences have pointed to climate change as a reason to be worried about health and health as a reason to be worried about climate change. But the work of sussing out exactly how health law might be used as a tool to promote adaptation to the health impacts of climate change is only just beginning.

The grand challenge of health adaptation is that climate change is expected to intensify exactly those health threats that have tended to be neglected by current law and policy structures relevant to global health. The burden of unhealthy environments on health is already significant. Poor environmental conditions are strongly implicated in the burdens of diarrheal illnesses, malnutrition, and vector-borne diseases like malaria, which in turn represent some of the most serious health threats in the world, especially among children in developing countries. Health scientists and public health specialists have a reasonably good understanding of how environmental conditions affect health and a fairly well developed body of interventions for promoting better health through drinking water and sanitation improvements, vector control, and emergency planning. What has been sorely lacking is the political will to commit sufficient resources to supporting these efforts in the communities where they are most needed.

10. Id. at 5-6, 9-11.
11. See, e.g., Global Health Watch 2: An Alternative World Health Report, at 154 (2008), available...
political disregard of the environmental burden of disease is manifest in the lack of sufficient funding but also in the ways in which the law privileges certain types of health interventions—such as the prevention of cross-border spread of novel and highly communicable diseases like SARS or pandemic influenza, or the provision of antiretroviral therapy for HIV/AIDS as a human right—and not others.

This paper argues that climate change has the potential to be a powerful driver for change within global health law and governance. Multilateral cooperation with respect to health has been dominated by treatment-focused and security-based approaches that focus on more proximate, “downstream” determinants of health. In recent decades, rapid innovation in medical technologies and other factors have led to an emphasis in health law and policy on adequate and equitable provision of health care services at the expense of basic public health interventions. Yet the health threats associated with climate change will be impossible to address through medical technologies alone. At the same time, recent focus on biosecurity concerns such as the global spread of emerging infectious diseases and biological terrorism has further entrenched a security-based approach to global health law and policy. Yet, for the most part, the health threats associated with climate change are not of the type that have typically gained the attention of industrialized countries concerned with their own national security interests. This paper proposes that health adaptation to climate change, based on the UNFCCC’s driving principle of “common but differentiated responsibility” (CBDR), provides an alternative to treatment-focused and security-based approaches. Climate change has the potential to move global health law upstream in ways that will inure to the benefit of the world’s poorest and least healthy people.

From here, the paper proceeds as follows. The next part describes the importance of “upstream” determinants of health: the social, economic, and environmental factors that play a major role in determining individual health behaviors and exposure to health hazards. It goes on to explain the impact of climate change on these determinants and the resulting consequences for human health. Part III offers some background on international climate law and gover-

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12. Naidoo, supra note 11.
nance under the UNFCCC and the shift toward developing an adaptation response to climate change. It then describes the challenges associated with health adaptation to climate change. Part IV introduces the emerging discipline of global health law and policy and describes the security-based and treatment-focused approaches that have largely dominated the field. Finally, Part V argues that a fundamental shift in global health law toward greater emphasis on upstream determinants of health will be necessary for it to fulfill its potential as a powerful tool for health adaptation to climate change. It points to emerging developments in global health law as indications that such a shift is possible and argues that the CBDR principle might play a role in supporting these developments. The conclusion suggests that this emerging move upstream is not only important from the standpoint of adaptation to climate change but is also normatively compelling because it is more responsive to the social justice imperative of public health.

The woeful breakdown of negotiations at the recent UNFCCC Conference of Parties in Copenhagen highlighted the crucial importance of relations between industrialized and developing countries to the international response to climate change. The United States and other wealthy countries have insisted that they cannot commit to drastic reductions in greenhouse gas emissions unless their competitors with rapidly industrializing economies (especially China, India, and Brazil) will also commit to some restrictions. In turn, these rapidly industrializing countries have joined with poorer developing countries in demanding major adaptation assistance from developed countries as a condition of their participation in mitigation efforts. This disagreement was at the crux of the (sadly nonbinding) Copenhagen Accord that emerged out of final-hour negotiations between the U.S., China, and others. It also goes to the heart of the divide between how climate change is perceived in the North and in the South, which Benito Müller described in the quotation used as an epigraph here. As a result of the powerful negotiating position of these rapidly industrializing countries,


17. See UNFCCC Conference of the Parties, Fifteenth Session, Copenhagen, Denmark, Dec. 7–18, 2009, *Draft Decision /CP.15*, U.N. Doc. FCCC/CP/2009/L.7 (Dec. 18, 2009), available at http://unfccc.int/resource/docs/2009/cop15/eng/107.pdf. Developed country parties to the Copenhagen Accord committed USD 30 billion towards adaptation and mitigation efforts in the developing world for the period from 2010 to 2012. They also signed onto to a goal of “mobilizing jointly USD 100 million dollars a year by 2020.” Id. Art. 8. More generally, the Accord provides that developed countries “shall provide adequate, predictable and sustainable financial resources, technology and capacity-building to support the implementation of adaptation action in developing countries . . . .” Id. Art. 3.
climate change is currently enjoying a spotlight on the world stage as an issue of human welfare and as a matter of inequity "between human victims and human culprits."\textsuperscript{18} It is an issue of urgent importance to global health and global health law, and the news is not altogether dire. In responding to the looming crisis of climate change as a health issue, there is an opportunity to advance global health law toward objectives of far more lasting relevance than biosecurity and interventions focused on particular diseases. There is an opportunity, in moving global health law upstream, to also move it toward greater fulfillment of its normative commitment to social justice.

II. CLIMATE CHANGE AND HUMAN HEALTH

A. THE IMPORTANCE OF UPSTREAM DETERMINANTS OF HEALTH

In recent decades, public health experts have shed light on the important role played by upstream\textsuperscript{19} social,\textsuperscript{20} economic,\textsuperscript{21} and environmental\textsuperscript{22} factors in determining the physical, mental, and social well-being of individuals and communities. The social context of health includes a myriad of variables such as access to education, urbanization, working conditions, political empowerment, and the position of marginalized groups as well as the laws and policies that govern health care and healthy conditions.\textsuperscript{23} An individual’s or community’s economic resources play a key role in determining health via many paths, most notably differential access to health care and basic needs (like water, nutrition, and shelter) and disparities in health behaviors (such as alcohol, drug, and tobacco use; diet and exercise; sexual behaviors; and compliance with health care

\begin{footnotesize}
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\item \textsuperscript{18} Müller, supra note 1, at 2.
\item \textsuperscript{19} The upstream/downstream parable is a mainstay of public health. See, e.g., Sandra Steingraber, Living Downstream: An Ecologist Looks at Cancer and the Environment xvi (1997) ("The residents who live [in a village by a river], according to parable, began noticing increasing numbers of drowning people caught in the river's swift current and so went to work inventing ever more elaborate technologies to resuscitate them. So preoccupied were these heroic villagers with rescue and treatment that they never thought to look upstream to see who was pushing the victims in.").
\item \textsuperscript{21} See, e.g., Lant Pritchett & Lawrence H. Summers, Wealthier is Healthier, 31 J. HUM. RESOURCES 841–42 (1996).
\item \textsuperscript{22} See, e.g., WHO, Preventing Disease Through Healthy Environments, supra note 9, at 4–5. See generally Hilary Benn, The Environmental Determinants of Health, 16 GLOBAL HEALTH PROMOTION 42 (2009), available at http://ped.sagepub.com/cgi/reprint/16/1_suppl/42 (discussing the impact of environmental factors upon mental and physical well-being).
\item \textsuperscript{23} See WHO, Commission on Social Determinants of Health, supra note 20, at 1.
\end{enumerate}
\end{footnotesize}
Environmental determinants are so essential and basic to health that our environment has been called "the foundation of our mental and physical well-being." Increasingly, these so-called upstream determinants of health are drawing the attention of health law scholars, advocates, and policymakers who argue that the objective of health law and policy is not only to promote downstream interventions by ensuring access to treatment for illness and injury but also to ensure healthy conditions upstream.

Climate change is expected to have a major impact on several important upstream determinants of health, and we are already seeing the impacts of environmental degradation on a more local scale. These changes to our environment obviously have direct effects on environmental determinants of health, especially exposure to natural disasters and disease-carrying vectors, access to safe and potable water, and food security. Climate change and more widespread environmental degradation will also have less direct effects on health through their impact on social stability and economic growth. Analysis of social determinants of health, combined with what we know about the types of health threats we are likely to see as a result of climate change, teaches that the social position of marginalized populations may make them particularly vulnerable to climate change impacts, while at the same time less capable of adaptation.

Environmental determinants are already responsible for a considerable portion of global disease burden (a statistical measure that aggregates loss of healthy years of life due to disease or disability, measured in disability-adjusted life years, or DALYs). Nearly one-quarter of the total global disease burden and as much as one-third of the disease burden among children under age fourteen is believed to be attributable to modifiable environmental factors. Approximately 94% of diarrheal illness and 42% of malaria worldwide is attributable to modifiable environmental factors. The impact of unhealthy environments is felt disproportionately by children (who are especially vulnerable to complications and death from these illnesses), particularly in the developing world. The World

24. See, e.g., Deaton, supra note 20, at 17–18, 20.
25. Benn, supra note 22, at 42.
29. See WHO, supra note 9, at 5.
30. Id. at 5–6.
Health Organization (WHO) estimates that more than four million child deaths each year are attributable to environmental causes, and that the infant death rate from environmental causes is twelve times higher in developing countries than in developed countries.\footnote{31} Nearly five thousand children die each day as a result of inadequate water and sanitation alone.\footnote{32}

Climate change acts largely as an intensifier of existing threats to health. We understand the mechanisms by which environmental factors contribute to global disease burden and we have readily available interventions and techniques for combating these threats to health. The problem of health adaptation to climate change is not so much a need for innovative technologies (though significant resources are being deployed to develop new tools, such as a vaccine for malaria\footnote{33} or cheaper, lower energy water filtration\footnote{34}). The problem is that we lack the political will and effective legal and governance mechanisms to translate existing public health approaches into widespread practice.

\section*{B. THE LIKELY HEALTH IMPACTS OF CLIMATE CHANGE AND WIDESPREAD ENVIRONMENTAL DEGRADATION}

\subsection*{1. Heat}

Global warming will mean higher average temperatures, as well as an increase in the frequency of heat waves.\footnote{35} Although dramatic media coverage of the devastating property damage caused by hurricanes and tornadoes may lead us to believe otherwise,\footnote{36} heat waves are in fact the leading cause of weather-related deaths in the U.S. and many other places.\footnote{37} Extreme heat—which can complicate cardiovascular, respiratory, and renal disease, as well as diabetes—is particularly dangerous for the elderly.\footnote{38} Higher average temperatures and more frequent

\begin{thebibliography}{99}
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\item 31. \textit{Id.} at 2.
\item 32. \textit{GLOBAL HEALTH WATCH 2, supra} note 11, at 160.
\item 35. \textit{INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2007: THE PHYSICAL SCIENCE BASIS: SUMMARY FOR POLICYMAKERS, CONTRIBUTION OF WORKING GROUP I TO THE FOURTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE} 10, 12 (Feb. 2007).
extremely hot days also pose other threats to health as well. Air pollution—especially ground-level ozone and particulate matter (PM)—will be exacerbated by higher temperatures with resulting impacts on cardiovascular and respiratory illness. Ground-level ozone pollution can cause diminished lung function that is short-term and reversible as well as more persistent inflammation of lung tissue. Research suggests that people who live in high-ozone areas are more likely to suffer from asthma and other respiratory illnesses. Exposure to PM has been associated with short-term respiratory effects, including exacerbation of asthma, as well as the development of chronic bronchitis and incidence of heart attack and arrhythmias.

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39. See, e.g., Susan M. Bernard, The Potential Impacts of Climate Variability and Change on Air Pollution-Related Health Effects in the United States, 109 ENVTL. HEALTH PERSP. 199, 202, 206 (2001). Ground-level ozone (the primary constituent of smog) is formed by chemical reactions between certain air pollutants and sunlight. It is distinct from the upper-level atmospheric ozone that protects us from harmful UV rays. See, e.g., id.

40. Particulate matter (PM2.5), which includes all airborne particles that are less than 2.5 micrometers in diameter, is also formed through atmospheric reactions (which are influenced by rising temperatures) among various pollutant gasses. See, e.g., U.S. ENVIRONMENTAL PROTECTION AGENCY, FINE PARTICLE (PM2.5) DESIGNATIONS: BASIC INFORMATION (2008), http://www.epa.gov/pmdesignations/basicinfo.htm.


42. See, e.g., Lawrence J. Folinsbee et al., Pulmonary Function and Symptom Responses After 6.6-hour Exposure to 0.12 ppm Ozone with Moderate Exercise 38 J. AIR POLLUTION CONTROL ASS’N 28, 34 (1988) (concluding that exposure to ozone results in significant lung function effects); Robert B. Devlin, et al., Exposure of Humans to Ambient Levels of Ozone for 6.6 Hours Causes Cellular and Biochemical Changes in the Lung, 4 AM J. OF RESPIRATORY CELL AND MOLECULAR BIOLOGY 72, 78–80 (1991).


Higher ambient temperatures may also lead to an increase in food-borne illness. Salmonellosis has been shown to be particularly sensitive to increased temperatures, whereas campylobacteriosis is affected by climate change through its impact on water scarcity rather than temperature, as discussed below. Higher ocean surface water temperatures may also lead to an increased incidence of food poisoning through contamination of shellfish and reef-fish. Harmful algae blooms are promoted by higher temperatures and can lead to ciguatera poisoning, caused by eating fish contaminated with toxins produced by marine microalgae. Higher temperatures can also promote methylation of mercury (whereby mercury is transformed into its most toxic form), leading to increased incidence of mercury exposure from contaminated seafood.

2. Severe Weather Events

Arguably the most high profile health impact of climate change is an increase in the extremity, frequency, and geographic range of severe weather incidents that have the potential to cause death and disability. In addition to heat waves (discussed above) and floods and droughts (discussed below), tropical storms are likely to be more severe and possibly more frequent in a changed climate. Sea-level rise has the potential to dramatically increase storm surge, which in turn plays an important role in determining how destructive a hurricane or typhoon will be.

In addition to injuries and deaths directly attributable to hurricanes, floods, and wildfires, we often also see less obvious effects on health. Such events can lead to chronic bronchitis; Francesca Dominici et al., *Fine Particulate Air Pollution and Hospital Admission for Cardiovascular and Respiratory Diseases*, 295 JAMA 1127, 1133 (2006) (concluding that particulate matter is associated with cardiovascular and respiratory disease); Francine Laden et al., *Reduction in Fine Particulate Air Pollution and Mortality: Extended Follow-up of the Harvard Six Cities Study*, 173 AM. J. RESPIRATORY & CRITICAL CARE MED. 667, 670 (2006) (noting correlation between particulate matter and cardiovascular disease).


47. IPCC, *IMPACTS, ADAPTATION AND VULNERABILITY*, supra note 41, at 400.

48. Id.

49. There is uncertainty as to whether storms will become more frequent worldwide, but it is widely agreed that the geographic distribution of tropical storms will change, bringing greater frequency to some areas. See, e.g., Robert C. Balling Jr. & Randall S. Cerveny, *Compilation and Discussion of Trends in Severe Storms in the United States: Popular Perception v. Climate Reality*, 29 NAT. HAZARDS 103, 110 (2003); Kerry Emanuel, *Increasing Destructiveness of Tropical Cyclones Over the Past 30 Years*, 436 NATURE 686, 687 (2005); P.J. Webster et al., *Changes in Tropical Cyclone Number, Duration, and Intensity in a Warming Environment*, 309 SCIENCE 1844, 1844-45 (2005).

increased exposure to infectious diseases and hazardous chemicals through contaminated floodwaters or unsanitary living conditions following an event.\textsuperscript{51} The displacement caused by natural disasters can lead to a dangerous disruption in health care for those suffering from chronic diseases—such as HIV/AIDS, diabetes, and cardiovascular disease— which require regular access to medications and treatments. The mental health effects of natural disasters have gained attention in recent years, with some suggesting that they make up a significant and often underestimated portion of disease burden attributable to such events.\textsuperscript{52}

3. Water

The most concerning impact of climate change, at least from a health standpoint, is its effect on water.\textsuperscript{52} Periodic drought may lead to an increase in frequency and severity of wildfires in some areas, with resulting injuries and

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\item Rising temperatures are likely to have a major impact on the water cycle leading to periodic drought and flooding as well as more permanent shifts in regional climate. See, e.g., Thomas F. Stocker & Christoph C. Raible, Climate Change: Water Cycle Shifts Gear, 434 Nature 830, 830 (2005) (discussing effects of climate-change induced changes in the water cycle upon global climate); Axel Bronstert, Floods and Climate Change: Interactions and Impacts, 23 Risk Analysis 545, 545–547 (2003) (noting correlation between changes in global climate and water-based natural disasters); Kenneth E. Kunkel, North American Trends in Extreme Precipitation, 29 Nat. Hazards 291,293 (2003) (describing a relationship between climate change and flooding); C.A. Senior et al., Predictions of Extreme Precipitation and Sea-level Rise Under Climate Change, 360 Philosophical Transactions of the Royal Society of London A 1301,1301 (2002) (noting the correlation between warmer climates and intensity of the hydrological cycle).
\end{enumerate}
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impacts on air pollution. More permanent drying in some regions and periodic extremes of drought and flood in others will impede regular access to safe, adequate water supplies for drinking and sanitation, which can be devastating for health. Water-washed diseases, such as rotavirus, are affected by hygiene practices and thus sensitive to water scarcity. Waterborne diseases, such as cholera, cryptosporidiosis, and campylobacteriosis, are affected both by droughts (which concentrate pathogens in pools) and by floods (which increase runoff and microbial contamination of water supplies). Periodic flooding causes direct injuries and deaths to humans and can also affect insect, rodent, and other vector populations, temporarily increasing human exposure to the infectious diseases they carry. Periodic drought and flooding, along with increasingly severe weather events, rising sea levels, and salinization of agricultural lands, are also likely to exacerbate a global food crisis already in evidence today.

Regional changes in temperatures and rainfall, as well as periodic flooding, will also result in more permanent shifts in the geographic range of animal vector and reservoir populations. Vector-borne infectious diseases, such as malaria, dengue fever, West Nile virus, and Lyme disease, are transmitted from human to human by blood-feeding arthropods like mosquitoes and ticks. Zoonotic diseases, such as Hantavirus carried by rodents or H5N1 influenza carried by birds, develop in an animal population reservoir and are then transferred through animal-human contact. Both types of illness are affected by environmental conditions that alter the survival, persistence, habitat range, and transmission of a variety of species in ways that may bring them into greater contact with humans. The impact of climate change on malaria and dengue fever (the

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57. IPCC, IMPACTS, ADAPTATION AND VULNERABILITY, supra note 41, at 401.
60. See, e.g., IPCC, IMPACTS, ADAPTATION AND VULNERABILITY, supra note 41, at 408.
61. See, e.g., D.J. Rogers & S.E. Randolph, Climate Change and Vector-Borne Diseases, 62 ADVANCES PARASITOLOGY 345 (2006) (describing certain climate change parameters that affect vector-borne diseases); P.
vector-borne illnesses with the greatest disease burden) is particularly concerning. Changing rainfall and temperature patterns can alter the geographic distribution of vector mosquitoes. As mosquitoes carrying malaria and dengue move to higher latitudes and altitudes, they will threaten human populations that are naïve to these diseases and thus particularly vulnerable to complications.

4. Destabilization

In addition to these more immediate effects of climate change and environmental degradation on health, social and economic destabilization has the potential to affect health in a myriad of ways. Over the next several decades, the impact of environmental degradation on access to food, water, and safe shelter will leave a growing world population competing for ever decreasing resources. Over the course of time, rising sea levels, natural disasters, and competition for scarce resources are likely to lead to major displacements of populations both within and across national borders. Approximately 200 million people are predicted to be forced to migrate as a consequence of climate change by 2050. These conditions are also likely to provide fertile conditions for intensification of armed conflict in many regions. Even where populations are not pushed to move or to


63. See, e.g., Hales et al., supra note 61, at 99 (suggesting that warmer weather leads to more severe outbreaks).

64. See David Hodgkinson et al., The Hour When the Ship Comes in: A Convention For Persons Displaced by Climate Change, MONASH L.R. (forthcoming 2010) (reviewing various projections for the scale of climate change induced migration); see also Jeffrey D. Sachs, Climate Change Refugees, SCI. AM. (June, 2007), available at http://www.scientificamerican.com/article.cfm?id=climate-change-refugees-extended.


fight, they may be forced to dramatically alter their social and cultural practices to adjust to changed conditions. Particularly for indigenous communities, disruptions to traditional ways of living could result in loss of social cohesion and significant mental health impacts. The impacts of social and economic instability on human health and wellbeing will demand significant multilateral action.

As much as the international community has struggled to reach consensus on action to mitigate climate change through reductions in atmospheric greenhouse gas concentrations, even greater challenges loom on the horizon. An effective adaptation response will require a fundamental change in the way that the United States and other wealthy nations view their obligations to those outside their borders. These obligations gain moral impetus from the connection between the prosperity enjoyed in wealthy countries over the last several decades and the environmental degradation that has the potential to devastate the poorest countries of the world. This connection is embodied by the UNFCCC’s reliance on CBDR, a principle that has the potential to prompt a significant shift not only in environmental regulation, but also in global health law.

III. THE UNFCCC, ADAPTATION AND HEALTH

A. FOCUS ON ADAPTATION IN THE UNFCCC

Research on health and other impacts on human wellbeing is playing an important role in motivating an international response to the threat of climate

67. See, e.g., IPCC, IMPACTS, ADAPTATION AND VULNERABILITY, supra note 41, at 523; ROSS GARNAUT, THE GARNAUT CLIMATE CHANGE REVIEW: FINAL REPORT 139 (2008) (arguing that one of the most concerning health impacts of climate change in Australia is likely to be the mental health and emotional costs of climate change induced disruptions to traditional ways of living in remote indigenous communities).


69. See, e.g., Lean, supra note 14.


71. See, e.g., Daniel A. Farber, Basic Compensation for Victims of Climate Change, 155 U. PA. L. REV. 1605 (2007) (arguing that the costs of climate change should be borne by large-scale emitters of greenhouse gasses); but see Posner & Sunstein, supra note 70 (refuting the corrective justice argument for the United States’ special responsibility with respect to the victims of climate change).

change. Proposals to reduce emissions and increase sinks of greenhouse gasses and thereby limit the extent of climate change (referred to as “mitigation” in the language of the climate community) have dominated debate. Negotiation of a successor to the Kyoto Protocol (the principle international mitigation regime, which is set to expire in 2012) has put the UNFCCC squarely in the media spotlight in recent years. The UNFCCC’s stated objective is “to achieve ... stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system ... within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.”

The likelihood that we will be able to slow down climate change enough to prevent a serious threat to food production and allow for natural adaptation by ecosystems, however, is diminishing with each passing year.

Although the UNFCCC and the Kyoto Protocol are primarily focused on mitigation, the Convention has from its outset included another approach to climate change as well: planned adaptation to make human systems more resilient to the impacts of climate change. Article 4.1 of the Convention includes a commitment by member states to develop and implement programs that include “measures to facilitate adequate adaptation to climate change” alongside measures to reduce emissions and protect and increase sinks. Member states have also agreed to “[c]ooperate in preparing for adaptation to the impacts of climate change,” and in Article 4.4, certain developed countries (specifically listed in Annex 2) agree to “assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects.”

As the likelihood of swift and sweeping action on mitigation decreases, scientists and policymakers alike have begun to discuss adaptation approaches in earnest alongside ongoing negotiations on mitigation. As early as the 2001

73. The growing importance of health impacts in the political debate over climate change is illustrated by controversy over the Bush administration’s decision to censor parts of then-Director of the U.S. Centers for Disease Control and Prevention Julie Gerberding’s testimony when she testified before Congress on the consequences of climate change for public health. To see copies of the original and censored testimony, see Climate Science Watch, The Censored Testimony of CDC Director Julie Gerberding (Oct. 24, 2007), available at http://www.climatesciencewatch.org/index.php/csw/details/censored_cdc_testimony.

74. See, e.g., Lean, supra note 14.

75. UNFCCC, supra note 2, art. 2.


77. UNFCCC, supra note 2, art. 4.1(b).

78. Id. art. 4.1(e).

79. Id. art. 4.4.
UNFCCC annual Conference of Parties (COP), parties negotiated the establishment of the Least Developed Country Fund to finance implementation of national adaptation plans and the Special Climate Change Fund, which prioritizes adaptation projects. The 2005 and 2006 COPs focused particularly on adaptation with the negotiation of the Kyoto Protocol Adaptation Fund and the Nairobi Work Program on Adaptation. At the 2008 COP, parties agreed upon administrative and legal arrangements necessary to make the Adaptation Fund fully operational.

Adaptation is playing a key role in the negotiation of a mitigation regime as well. Wealthy countries like the United States and the member states of the European Union are unwilling to agree to drastic emissions reduction targets unless their emerging economic competitors—rapidly industrializing countries like China, India, and Brazil—are also bound to some extent. In turn, these rapidly industrializing countries have insisted that their willingness to commit to mitigation measures is closely tied to a strong commitment of aid from wealthy


81. The Adaptation Fund is dedicated to enabling concrete adaptation activities. It is financed by a two percent tax levied on Clean Development Mechanism (CDM) projects, emission offset projects undertaken by industrialized countries (primarily by way of private enterprises) in the developing world. This innovative funding mechanism has the potential to create an adaptation budget that has significantly greater funding than the previous funds provided. See UNFCCC, Adaptation Fund, http://unfccc.int/cooperation_and_support/financial_mechanism/adaptation_fund/items/3659.php (last visited Sept. 10, 2009). The Adaptation Fund Board has indicated that it wishes to implement “[a]daptation activities promptly where sufficient information is available to warrant such activities, inter alia, in the areas of water resources management, land management, agriculture, health, infrastructure development, fragile ecosystems, including mountainous ecosystems, and integrated coastal zone management. Adaptation Fund Board, Third Meeting, Bonn, Sept. 15–18, 2008, Draft Provisional Operational Policies and Guidelines for Parties to Access Resources from the Adaptation Fund (Aug. 26, 2008), available at http://www.adaptation-fund.org/images/AFB.B.3.8_Operational_Policies_and_Guidelines_08.26.08._revised.1.pdf.


84. See, e.g., Lazarus, supra note 15, at 1173.
countries. Developing countries are seeking financial and technical assistance to promote the transition to a cleaner energy economy and adaptation to the impacts of climate change.

The increasing attention paid to adaptation approaches has not been without controversy. Some climate change advocates have expressed concern that adaptation planning effectively admits defeat on mitigation efforts and casts climate change impacts as manageable. Certainly, adaptation should not be used as an excuse for not mitigating climate change. But research suggests that we are already seeing some of the impacts of climate change, making rejection of adaptation altogether irresponsible. A reasoned approach to climate change discards the either/or dichotomy of mitigation versus adaptation and embraces both. In fact, focus on adaptation has in some ways moved the global response to climate change forward by prompting a more concrete discussion of climate change impacts and creating new opportunities to engage scientific and policy communities in other fields, including agriculture and global health.

B. HEALTH ADAPTATION TO CLIMATE CHANGE

"Health" is specifically mentioned twice in the UNFCCC text. Article 1.1 acknowledges health impacts and the Article 4.1(f) commits parties to assess mitigation and adaptation measures "with a view to minimizing adverse effects on . . . public health." On the other hand, sections of the text committing states to adaptation do not specifically discuss health as a concern. This is a major

86. Id.
88. INTEGRATION OF PUBLIC HEALTH WITH ADAPTATION TO CLIMATE CHANGE: LESSONS LEARNED AND NEW DIRECTIONS xviii (Kristie L. Ebi et al. eds., 2005) (noting that adaptation “shifts the question from whether impacts from climate change will occur in the near term, and whether some portion will be unacceptable, to the hows of achieving some control over the more dire consequences expected”).
89. “[A]dverse effects of climate change” are defined as “changes in the physical environment or biota resulting from climate change which have significant deleterious effects on the composition, resilience or productivity of natural and managed ecosystems or on the operation of socio-economic systems or on human health and welfare.” UNFCCC, supra note 2, art. 1.1 (emphasis added).
90. Member states commit to “employ appropriate methods, for example impact assessments, formulated and determined nationally, with a view to minimizing adverse effects on the economy, on public health and on the quality of the environment, of projects or measures undertaken by them to mitigate or adapt to climate change.” Id. art. 4.1(f) (emphasis added).
91. Member states commit to “[c]ooperate in preparing for adaptation to the impacts of climate change; develop and elaborate appropriate and integrated plans for coastal zone management, water resources and agriculture, and for the protection and rehabilitation of areas, particularly in Africa, affected by drought and desertification, as well as floods.” Id. art. 4.1(e).
oversight. Global health infrastructure will be a crucial determinant of how severe the impact of climate change will be on human life.

Health infrastructure can mean different things to different people, and it is not entirely clear which adaptation measures are properly within the province of “health” and which are not. I take an extremely broad view here, setting forth an approach to health adaptation that encompasses a wide range of potential interventions to protect human health from the risks associated with climate change. Under the umbrella of “health adaptation,” I propose to include not only health care infrastructure (the resources we deploy to treat and prevent injury and illness at the level of individual interactions with patients) and public health infrastructure (services aimed at promoting health and preventing disease and injury at the population level), but also systems generally treated as distinct from the health sector: disaster response, water management, and agriculture. Obviously, advocates and policymakers from fields other than health will play a leading role in adaptation planning in non-health sectors. The health sector has health-focused governmental and nongovernmental organizations at the local, national, regional, and international levels managing the competing concerns of a variety of stakeholders. The emergency management, water resources, and agriculture sectors have similar regimes of their own. Nonetheless, I argue below that health concerns have an important role to play in these sectors and may not be adequately represented unless health advocates and policymakers become more involved in adaptation planning in areas outside of those traditionally thought of as “health.”

1. Health Care

The most proximate realm of possible interventions to protect human health from harms associated with climate change is health care infrastructure. This includes hospitals, clinics, and the doctors, nurses, and other health care professionals who provide treatment to individual patients. It also encompasses the medicines, vaccines, and other treatment technologies that we deploy to prevent and treat illness and injury. There has been very little discussion about how the delivery of health care services might be changed by the threats we are likely to face as a result of climate change. If current trends persist, considerable resources might be directed toward the development of new drugs, vaccines, and other technologies to address the intensification of certain health threats in the context of climate change. High-profile funders have put hundreds of millions of dollars into the development of a malaria vaccine, for example.92 Although these efforts

have great potential to save and improve lives, health adaptation to climate change must go far beyond the development of new drugs, vaccines, or technologies. Despite the rapid growth of an impressive array of interventions and technologies to protect health, disparities in health outcomes have continued to widen.\footnote{93} As WHO Director-General Margaret Chan has explained, "[t]he power of existing interventions is not matched by the power of health systems to deliver them to those in greatest need, in a comprehensive way, and on an adequate scale."\footnote{94}

An increase in resources for health systems strengthening (an effort that is already underway as part of the U.N. system’s approach to the millennium development goals and the Healthy People 2010 initiative in the U.S.)\footnote{95} is an obvious objective for health adaptation to climate change. But doing more with available resources is equally important.\footnote{96} Greater spending alone does not necessarily result in better health outcomes.\footnote{97} Given what we know about the particular vulnerability of poor countries and poor communities within wealthier countries to environmental health impacts, it is clear that affordability and accessibility issues will be crucial to the health sector’s response. Health worker migration from developing to developed countries, which has been taken up as a key challenge to global health equity,\footnote{98} will take on even greater importance in the face of intensification of a wide range of health threats in the developing world as a result of climate change. Training of the health care workforce on the particular risks associated with extreme heat events, natural disasters, and food-, water-, and vector-borne disease will also be very important as the geographic range of these threats shifts with environmental changes.\footnote{99}

\footnote{93} Margaret Chan, Foreword to WHO, EVERYBODY’S BUSINESS: STRENGTHENING HEALTH SYSTEMS TO IMPROVE HEALTH OUTCOMES, at iii (2007), available at http://www.searo.who.int/LinkFiles/Health_Systems_EverybodyBusinessHSS.pdf.

\footnote{94} Id.


\footnote{96} See generally id.

\footnote{97} Comparisons of per-capita spending on health with average life expectancy show that higher spending on health does not by itself lead to better health outcomes. See, e.g., University of California, UC Atlas of Global Inequality, Health Care Spending, http://ucatlas.ucsc.edu/spend.php (last visited Feb. 3, 2010).


2. Public Health

As distinct from health care infrastructure, public health infrastructure focuses on population health. It includes sanitation, vector control, and injury prevention in the home, community, and workplace; surveillance and early warning systems (for infectious disease, chronic disease, and toxic exposures); as well as health communication and education (to arm the public with information about protective health behaviors and available health services). These interventions tend to be extremely cost-effective. Particularly where they target environmental determinants of health, they tend to promote health equity by improving the living conditions of vulnerable populations. Despite these benefits, however, spending on public health is negligible compared to health care spending. In addition to the need for an increase in the resources available for basic public health interventions, balancing conflicting interests is likely to be a crucial consideration for public health adaptation planning, because the impacts of climate change are so cross-cutting. A number of public health interventions raise issues of individual rights (such as the conflict between health surveillance objectives and privacy rights) or competing health and environmental considerations (as is the case with vector control programs, which raise concerns about environmental harms of pesticide use, as well as potential long-term health effects that must be balanced against the potential for control of infectious disease). As in the health care sector, the public health system must also pay careful attention to planning for groups that are particularly vulnerable to one or more health impacts of climate change (such as the elderly, the poor, urban residents, children, and the chronically ill).

3. Related Areas

Successful adaptation to the health impacts of climate change will of course


101. See, e.g., WHO, supra note 9, at 10 (noting that improvement of access to water would be particularly advantageous to women and children); GLOBAL HEALTH WATCH 2, supra note 11.


103. See generally Helene G. Margolis, Climate Change Public Health Impacts: Strategies for Adaptation (July 31, 2008), http://www.climatechange.ca.gov/adaptation/meetings/2008-07-31_meeting/Public_Health_Helene_Margolis_7_31_08.pdf (highlighting planning for populations vulnerable to heat-related illnesses and proposing short-term and long-term adaptation strategies for reducing these populations’ vulnerability through planning for transportation to cooling centers, education about associated health risks, and reducing social isolation).
require coordination with work in a number of related areas as well, including disaster response, water management, and agriculture. Although there are many in the public health sector who concern themselves with emergency management, the bulk of disaster response efforts have traditionally focused on damage to property and efforts to rebuild. A health-centered view of disasters and emergencies encompasses provision of emergency medical services (including mental health services), shelter, nutrition, water, and sanitation for victims. Considerable funding has been directed toward “preparedness” generally (and “biosecurity” specifically) in the U.S. and elsewhere. These initiatives are often framed as having applicability to “all hazards,” meaning that they will enhance preparedness for a wide range of possible threats. In reality, much of what has been done in the name of preparedness has tended to emphasize the mitigation of terrorist threats at the expense of preparedness for natural disasters. Climate change will challenge the preparedness community to refocus on natural disasters with special emphasis on the needs of vulnerable populations.

The need for adaptation measures in agriculture and water management are specifically mentioned in the UNFCCC text. Although these sectors have massive importance to health, the health law and policy community has not been significantly involved in discussion of adaptation measures for food and water security thus far. Better integration of the health community into adaptation planning for water management is particularly crucial in light of evolving understanding of the pathways through which access to water acts as a determinant of health and the effectiveness of various interventions. Additionally, water adaptation planning must balance the needs of a variety of sectors: water is essential to health, yes, but it is also essential to manufacturing, energy, and agriculture. These competing considerations mean that health planners equipped with sound scientific research on the water needs of the populations they serve must play an important role in representing the health sector in water management adaptation efforts.

The agriculture sector has been almost as involved in the climate change debate as the energy and transportation sectors. There has been considerable

107. See Wiley, supra note 8.
108. Id. at 39–41.
109. As noted above, the UNFCCC’s stated objective is “to achieve . . . stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system . . . within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.” UNFCCC, supra note 2, art. 2.
110. See, e.g., FAO at COP15, http://faoclimatechange.wordpress.com (detailing the Food and Agricultural
focus on the development of new agricultural technologies to meet growing demand for food production in the face of ecological changes that are harmful to crops. The suggestion that genetically modified crops (such as drought or flood resistant strains of staples like rice and wheat) will play an important role in agricultural adaptation has raised quite a lot of controversy over potential health and environmental risks associated with genetically modified organisms (GMOs). The health sector is likely to play a role in evaluating these possible risks and to weigh them against the potential benefits for fighting famine. Some mitigation and adaptation measures in the agricultural sector can have co-benefits for health, but others may come with negative consequences. Like water, agriculture serves needs that go beyond direct human consumption. For example, the emergence of biofuels from food crops like corn has led to rising prices for food staples.

IV. GLOBAL HEALTH LAW AS A POTENTIAL TOOL FOR HEALTH ADAPTATION

A. THE EMERGENCE OF GLOBAL HEALTH LAW

Climate change joins a growing list of transnational threats to health. Population growth and ever more rapid transit of people and goods across the globe have brought new dimensions to a number of global health concerns. These include the emergence and spread of infectious diseases, the threats of armed conflict and terrorist attacks, and the globalization of chronic disease. Health law and policy is currently in a phase of major growth and transition as legal scholars and policymakers attempt to keep pace with emerging understandings of these transnational threats to health. “Global health law” is in many ways a newly emerging field. Several prominent scholars have set forth proposed definitions

Office’s (FAO) considerable involvement in the Copenhagen COP and providing links to FAO policy documents and press releases on climate change) (last visited Feb. 4, 2010).


113. See Wiley, supra note 3.

114. See, e.g., GLOBAL HEALTH WATCH 2, supra note 11, at 133.


116. In 1997, the New Delhi Declaration on Global Health Law was adopted by the International Conference on Global Health Law in New Delhi, India, from December 5–7, 1997, co-sponsored by the Indian Law Institute and WHO. GLOBAL HEALTH LAW: PROCEEDINGS, SELECTED PAPERS AND RECOMMENDATIONS PRESENTED AT THE INTER-DISCIPLINARY INTERNATIONAL CONFERENCE ON GLOBAL HEALTH LAW (R.K. Nayak ed., 1997) (including the New Delhi Declaration on Global Health Law, as well as other selected papers). Later, in 1999, David Fidler discussed the distinction between “global health law” and international law with respect to health in the law review literature for the first time. David P. Fidler, International Law and Global Public Health, 48 U. KAN. L. REV. 1 (1999). Fidler was somewhat critical of the moniker. Id. at 51 (“Rather than pretend we have emerging
of its purview and objectives. In addition to arguing for the relevance of this field to climate change adaptation, this paper also seeks to contribute more generally to the ongoing discussion of what global health law should be and what it should do.

Perhaps a logical starting point for defining global health law is to explain that it goes beyond “international health law,” which concerns itself principally with agreements among nation-states with respect to health. The field of international health law (defined in this way) is actually quite limited, consisting principally of the International Health Regulations and the Framework Convention on Tobacco Control. The scope of global health law encompasses international health law, but also extends beyond it in three main directions. First, it reaches out to include fields of inquiry and action that are related to, but distinct from, health—such as trade, intellectual property, national security, human rights, humanitarian law, environmental law, labor law, and migration. Second, it seeks to address the legal rights and obligations not only of governmental actors but also individuals and nongovernmental players such as NGOs and corporations. Finally, it encompasses what might be referred to as “national health law in a global context,” under which national governments seek to implement their international obligations with respect to health and increasingly look to examples outside their borders in their search for law and policy tools to respond to globalized health threats.

principles of ‘global health law,’ I believe we should look at the future of national and international law on public health through the perspective of global health jurisprudence.


118. See, e.g., Ruger, supra note 26, at 424. (“International health law connotes a more traditional approach derived from rules governing relations among nation-states. Global health law, on the other hand, is developing an international structure based on the world as a community, not just a collection of nation-states.”); Taylor, supra note 117, at 500 (defining international health law as a growing field encompassing “treaties and other legal instruments addressing diverse and complex concerns.”).

119. See, e.g., Ruger, supra note 26, at 424; David P. Fidler, The Future of the World Health Organization: What Role for International Law?, 31 VAND. J. TRANSNAT’L L. 1079, 1109–10 (1998) (“WHO has to pay more attention to the many and diverse areas of international law that relate to its global health mission. These areas include, but are not limited to: (1) international trade law, (2) international human rights law, (3) international environmental law, (4) international law on biological, chemical, and nuclear weapons, (5) international maritime law, (6) international labor law, (7) international civil aviation law, (8) the law of the sea, (9) international telecommunications law, (10) international humanitarian law, (11) international intellectual property law, and (12) international law on bioethics.”).

120. Ruger, supra note 26, at 424 (“This structure [of community in global health law] is inclusive of individuals and nongovernmental organizations, especially where health problems are seen as truly global. Globalization has heightened the need for worldwide public health cooperation.”).

121. Cf. id. at 425 (“... solutions to global health disparities and externalities require more than international
1. The World Health Organization and the International Health Regulations

The World Health Organization (WHO) has one of the most expansive mandates in the UN system, thanks in large part to the extremely broad definition of health found in its Constitution.\(^\text{122}\) Although the World Health Assembly (WHA) (the governing body of the WHO) has notably broad legislative and regulatory powers under the WHO Constitution, it has generally refrained from using them.\(^\text{123}\) The International Sanitary Regulations (adopted in 1951, renamed the International Health Regulations in 1969, and revised most recently in 2005\(^\text{124}\)) make up one of only two regulations ever adopted by the WHA.\(^\text{125}\) The International Health Regulations (IHR) are aimed primarily—though as of the 2005 revisions, no longer exclusively—at the control of communicable diseases.\(^\text{126}\) The WHA's limited use of its broad constitutional authority is illustrative of a disconnect between the broad conception of "health" embraced by its constitution and institutional culture and the far more limited, security-based focus of its hard law regulations.\(^\text{127}\) David Fidler's insightful explication of the history of the IHR, described in some detail in this section, is useful for understanding how their purview has expanded under the 2005 revisions.\(^\text{128}\)

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\(^\text{122}.\) See WHO CONST. pmbl.; see also Eric Stein, International Integration and Democracy: No Love at First Sight, 95 AM. J. INT'L L. 489, 497 (2001) ("Of all the specialized agencies, the WHO has the largest budget (more than $842 million for two years) and—building on the heritage of international health activities dating back to 1857—probably the most expansive mandate of 'directing and coordinating authority' for health work.").

\(^\text{123}.\) Article 19 of the WHO Constitution gives the WHA "authority to adopt conventions or agreements with respect to any matter within the competence of the Organization." WHO CONST. art. 19. The WHO has made far greater use of soft-law mechanisms available to it under Article 23's grant of authority to make recommendations with respect to any matter within the competence of the organization. See Stein, supra note 122, at 498 ("WHO activities have been carried out primarily by consensus through nonbinding and less formal procedures such as recommendations, resolutions, and the promulgation of technical standards or guidelines drawn up by expert bodies. In one instance, the assembly framed its recommendation in the form of a 'code' [the International Code of Marketing of Breast-milk Substitutes, May 21, 1981, Doc. WHO/MCH/NUT/90.1.] This effort catapulted the WHO into a clamorous political-scientific controversy, involving not only governments but also powerful commercial interests and NGOs. After this unhappy experience, the assembly abandoned the code format."). Similarly, Article 21 of the WHO Constitution gives the WHA authority to adopt legally binding recommendations in a broad range of areas. WHO CONST. art. 21. Rather than the more typical—and politically burdensome—arrangement whereby member states must consent to opt into proposed regulations, the WHO Constitution provides that member states who do not wish to be bound must opt out by rejecting or submitting reservations to the regulations adopted by the WHA. WHO CONST. art. 22.


\(^\text{125}.\) The other is the Unification of Statistical Classification of Morbidity, adopted in 1948 and revised several times. Stein, supra note 122, at 497 & n.43.

\(^\text{126}.\) David P. Fidler, supra note 124, at 361.

\(^\text{127}.\) Id. at 333–34.

\(^\text{128}.\) Id.
Despite this notable expansion, however, the IHR remain firmly rooted in a security-based justification for international cooperation with respect to health. As discussed in Part V, below, this emphasis is detrimental to the potential of existing international health law as a tool for health adaptation to climate change.

The International Sanitary Regulations (ISR), adopted in 1951, were based on an approach to the legal control of infectious disease that dated back to at least the mid-nineteenth century. For more than a century, the notification requirements that triggered an international response (primarily relying on travel and trade restrictions to control the spread of disease) were applicable only to a short list of named infectious diseases, principally cholera, plague, and yellow fever. The list shifted slightly with the adoption of the ISR in 1951 and a series of minor revisions, and the ISR were retooled as the IHR in 1969, but the basic approach remained the same. As Fidler has explained, over time and for a variety of reasons, the IHR became largely irrelevant to the realities of infectious disease control in practice. Rapid increase in the speed of travel and trade made quarantine and isolation provisions far less effective, and advances in medical technologies, especially the development of antibiotics and vaccines, required a fundamentally different approach to fighting disease. Later, several new developments left WHO looking flat-footed, as many criticized its lack of leadership on new threats to health. These issues included the emergence of HIV/AIDS as one of the worst pandemics in history, the growing burdens of other infectious diseases like malaria and tuberculosis, and the proliferation of biological weapons.

The dramatic revision of the IHR, adopted in 2005 and put into force in 2007, came after a process of development and negotiation that took ten years. The new IHR's purpose is “to prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks and which avoid unnecessary interference with international traffic and trade.”

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129. Id. at 327–28.
130. Id. at 330.
131. Id. at 333.
132. See generally id. at 333–38 (attributing the fall of the classical regime out of which the ISR arose to several factors, including: the steep reduction in infectious disease risk within developed countries, largely as a result of national-level sanitation and vaccination efforts; the need for new approaches to widely distribute newly-developed antibiotics and vaccines; and the growing irrelevance of the IHR in the face of noncompliance, incompatibility with public health realities, and the emergence of new bodies of international law with relevance to health).
133. Id.
134. Id. at 338.
135. Id.
136. See World Health Association, Res. No. 48.7 (1995) (calling on the Director-General to prepare a revision of the IHR).
the new IHR is their application to all "public health emergencies of international concern," including not only infectious disease outbreaks, but also chemical and radio-nuclear events and perhaps other threats to health as well.\footnote{Id. art. 13.} A "public health emergency of international concern" is defined as "an extraordinary event which is determined . . . : (i) to constitute a public health risk to other States through the international spread of disease; and (ii) to potentially require a coordinated international response."\footnote{Id.} "Disease" is defined quite broadly as "an illness or medical condition, irrespective of origin or source, that presents or could present significant harm to humans."\footnote{Id. at 347-48.} This paper will discuss the potential application of the revised IHR to the health threats associated with climate change in greater detail below.

2. Related Fields of International Law

The long period of "marginalization and stagnation" of international health law as embodied in the IHR took place during a time when important new bodies of international law were emerging in other areas with high relevance to health.\footnote{Fidler, supra note 124, at 333.} International human rights law, international environmental law, and international trade law were all booming during this period.\footnote{Id.} At the same time, several other IGOs and NGOs began to take on health concerns.\footnote{Id.} Many important tools for health protection and promotion are now found in the law and policy of other substantive fields and the health sector is only slowly coming to appreciate their significance. Obviously, the relevance of international environmental law—particularly the UNFCCC—to global health law is a key lesson of this paper. As Fidler has noted, in many respects, environmental law has done more than international health law to address chronic disease threats.\footnote{See Eric Stein, International Integration and Democracy: No Love at First Sight, 95 AM. J. INT'L L. 489, 498 (2001) (noting that "over time the narrowness of [WHO's focus on infectious disease control] has caused problems for the organization, and other bodies, such as the World Bank, have entered the health field").} This was
certainly true prior to the adoption of the Framework Convention on Tobacco Control. With the adoption of the Framework Convention on Climate Change, and especially with its growing focus on adaptation, the international environmental law community has taken on the task of preventing environmental degradation and consequent harms to human health. In its potential impact on global health, this effort goes far beyond previous attempts to regulate hazardous substances. As the breakdown of negotiations at the recent UNFCCC Conference of Parties in Copenhagen showed, it is also proving to be far more challenging. The adaptation approach in particular requires very different law and policy tools than those that have typically been used to regulate pollution. Nonetheless, the UNFCCC has potential to assure healthy living conditions in ways that international cooperation on global health has failed to achieve.

The other crucial area for understanding the potential of global health law as a tool for health adaptation to climate change is the nexus between health and human rights. Public health researchers and human rights scholars have developed a rich body of work examining the ways in which violations of a wide range of fundamental human rights have important consequences for health. Some human rights violations—such as torture, slavery, violence against women, and harmful traditional practices—result in direct harms to health. Meanwhile, other violations—afflicting the rights to food and water, as well as rights to education and information—make victims more vulnerable to poor health. The most salient connection between health and human rights is, of course, the right to the highest attainable standard of health. The right to health was first articulated in the WHO Constitution and then adopted as part of the Universal Declaration of

Prevention of Marine Pollution by Dumping of Wastes and Other Matter, and the Convention on Long-Range Transboundary Air Pollution built on earlier attempts to reduce non-communicable disease risks associated with trans-boundary pollution, while at the same time creating a new international environmental regulatory regime that became increasingly segregated from health regulatory regimes (which were at the time intensifying their focus on infectious disease control). See id. at 337 & nn.71–73.


David Fidler has argued that “the actual impact” of international environmental law “on global public health has been, at best, modest.” While there has been some success in the regulation of “international transport of hazardous wastes and pesticides, and the depletion of the ozone layer,” international environmental law has largely failed to have “much effect on environmental degradation that feeds into the resurgence of microbial pathogens and their disease vectors.” Fidler, supra note 124, at 388–89.

See Lean, supra note 14.


WHO CONST., pmbl. (“The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or
Article 12 of the International Covenant on Economic, Social and Cultural Rights (ICESCR) includes the broadest articulation of the right to health, though health-related rights are also included in several other international treaties, including the International Convention on the Elimination of All Forms of Racial Discrimination, the Convention on the Elimination of All Forms of Discrimination Against Women, the Convention on the Rights of the Child, and the Convention on the Rights of Persons with Disabilities.

Parties to the ICESCR are obligated to progressively realize the right to health in accordance with available resources. The ICESCR itself requires parties to take steps to achieve certain identified health objectives, and General Comment 14 insists that all parties have an immediate obligation to ensure that people are provided with at least the minimum conditions under which they can live in dignity, enjoy the basic living conditions needed to support their health, social condition.


152. International Covenant on Economic, Social and Cultural Rights [ICESCR] art. 12, Dec. 16, 1966, 993 U.N.T.S. 3 (entered into force Jan. 3, 1976) (recognizing "the right of everyone to the enjoyment of the highest attainable standard of physical and mental health" and obligating parties to take steps to reduce infant mortality, improve environmental hygiene, prevent disease, and create conditions that assure medical service).


157. Convention on the Rights of Persons with Disabilities art. 25, Dec 13, 2006, UN. Doc. A/61/106 (recognizing that "persons with disabilities have the right to the enjoyment of the highest attainable standard of health without discrimination on the basis of disability" and obligating measures to ensure access to health services).

158. These include: "(a) the provision for the reduction of the stillbirth-rate and of infant mortality and for the healthy development of the child; (b) the improvement of all aspects of environmental and industrial hygiene; (c) the prevention, treatment and control of epidemic, endemic, occupational and other diseases; and (d) the creation of conditions which would assure to all medical services and medical attention in the event of sickness." ICESCR, supra note 152, art. 12.

and be free from avoidable mortality.\textsuperscript{160} Taken together, the IHR and jurisprudence surrounding the right to health are the two main areas of existing international law with relevance to health adaptation to climate change. Part V, below, will examine in greater detail the ways in which law and policy in both of these areas have been dominated by security-based and treatment-focused approaches that are not compatible with effective health adaptation to climate change.

3. The Role of Nongovernmental Actors

In an effort to expand beyond the traditional focus of international health law on agreements between nation-states, global health law also seeks to address the proliferation of private donor agencies working on global health objectives.\textsuperscript{161} Nongovernmental organizations (NGOs) like MAP International and Save the Children, private foundations like the Bill & Melinda Gates Foundation, and public-private initiatives such as the Global Fund for AIDS, Tuberculosis and Malaria and the Global Alliance for Vaccines and Immunizations (GAVI) play a major role in funding global health initiatives. These entities arguably play a greater role in global health promotion than the WHO.\textsuperscript{162} Scholars of global health governance and diplomacy have gone so far as to call for creation of a new body within the World Health Assembly to provide a forum for “more regular and structured debate between the broad range of the many key [public and private] partners” involved in promoting global health initiatives.\textsuperscript{163} The priorities these organizations establish and the ways in which their activities are coordinated and governed are of great relevance to an assessment of whether global health law and policy are well positioned to undertake health adaptation to climate change.

\textsuperscript{160} At a minimum, this includes: immunization against the major infectious diseases; measures to prevent, treat and control epidemic and endemic diseases; essential medicines, as defined by WHO’s Action Programme on Essential Medicines; reproductive, maternal (pre-natal and post-natal) and child health care; essential primary health care; right of access to health facilities without discrimination, especially for the poor and otherwise vulnerable and disadvantaged groups; and equitable distribution of all health facilities, goods and services. Governments must also provide “education and access to information about the main health problems in the community, including methods of preventing and controlling them; and appropriate training for health professionals, including education in health and human rights.” Id. at paras. 12, 44.

\textsuperscript{161} Gostin & Taylor, supra note 117, at 55 (“[T]o be an effective global health governance strategy, global health law must evolve beyond its traditional confines of formal sources and subjects of international law. It must foster more effective collective global health action among governments, businesses, civil society and other actors.”).


\textsuperscript{163} Silberschmidt, supra note 162, at 1484.
4. Domestic Health Law in a Global Context

Another key difference between "global health law" and "international health law" is that the former also includes national and local level law considered in a global context. Effective implementation of the 2005 revisions to the IHR will in many cases require adoption of new national-level legislation. This—combined with renewed attention to the need for strong public health infrastructure and legal capacity in the face of infectious disease threats like SARS, avian influenza, or H1N1—makes the time ripe for a boom in development of national-level health and public health laws. Legal scholars and policymakers across the globe will look at the well-developed public health law frameworks of the United States, South Africa, and other countries in a new light as they are held up as potential models for health laws in other settings.

Development of national and local public health law will also be increasingly important in the face of health threats associated with climate change and environmental degradation. Meeting UNFCCC obligations has prompted low and middle income countries to turn attention to further development of their environmental and health law regimes. Response to the increasing burden of environmental threats to health is a common project for many national and local governments. Thus, there is potential for a fruitful exchange regarding various approaches that might be taken to integrating health and environmental governance at the national and local level.

B. THE SECURITY AND TREATMENT BIASES IN GLOBAL HEALTH LAW

Global health law can be loosely theorized as negotiating the balance of rights,
duties, and obligations of public and private actors with respect to health. At the national level, public health law balances the powers and duties of the state to ensure the public’s health against individual rights and personal responsibilities with respect to health. At the international level, health law negotiates a different balance of rights and duties. As individual states seek to protect their populations from external threats, they make demands on their neighbors that are not always compatible with the internal priorities of those states. Thus, international health law balances the state’s responsibility to ensure its people’s health and its sovereign right to establish domestic policy priorities on the one hand with the state’s obligation to prevent the transnational spread of health threats on the other.

The ways in which global health law has balanced these competing interests have not always been true to the normative mission some have prescribed for it. Larry Gostin and Allyn Taylor, for example, have argued that, “[t]he moral foundation of global health law is justice.” Prescriptively, they have argued that “to make a difference to the world’s population, the international community should focus on . . . ‘basic survival needs’ [which] focus attention on the major determinants of health, including functioning health systems, sanitation, clean water, uncontaminated food, safe products and services and access to essential vaccines and pharmaceuticals.” As I will argue below, however, much of global health law has historically been tilted in favor of protecting the “health security” of wealthy populations from threats generally associated with poor populations. It has also tended to be biased toward providing treatment for illness and disease, rather than ensuring the basic conditions required for people to be healthy. These biases could be detrimental to the usefulness of global health law as a tool for protecting global health from climate change.

1. Security

The domain of international law is limited in fundamental ways by the sovereignty of nation-states. In particular, the duty of non-intervention in areas that are within the exclusive jurisdiction of other states and the dependence of international obligations on the consent of governed states limit the application of international law to social problems. Obligations under international law,

170. See generally LAWRENCE O. GOSTIN, PUBLIC HEALTH LAW: POWER, DUTY, RESTRAINT (2nd ed. 2008). Gostin describes the ways in which public health law balances “the legal powers and duties of the state . . . to ensure the conditions for people to be healthy . . . [and] the limitations on the power of the state to constrain for the common good the autonomy, privacy, liberty, proprietary, and other legally protected interests of individuals.” Id. at 4.
171. Gostin & Taylor, supra note 117, at 56.
172. Id. at 55.
173. IAN BROWNLIE, PRINCIPLES OF PUBLIC INTERNATIONAL LAW 289 (7th ed. 2008) (“The sovereignty and equality of states represent the basic constitutional doctrine of the law of nations.”).
174. Id.
whether generated by custom or treaty, generally arise out of a response to a shared concern that no single nation is able to address on its own. Thus, transboundary spread of disease has long been the mainstay of international health law. That pathogens “know no borders” is a common refrain issued to demand international cooperation with respect to health.\textsuperscript{175} Focus on the cross-border spread of disease has gone hand in hand with the influence of “health security” as the dominant norm of international health law.\textsuperscript{176} Contrary to aspirational statements that health equity and social justice should be the normative foundations of global health law,\textsuperscript{177} the driving force of international health law has, in reality, been a concern for national interests that may be affected by health threats arising outside of domestic borders.\textsuperscript{178} Gostin and Fidler have discussed the historical foundation of international health law in efforts “to protect the Western European frontier from the importation of cholera, yellow fever, and plague from Africa and Asia.”\textsuperscript{179} In some ways, emphasis on health security has evolved dramatically from its xenophobic roots, but this paper argues that a certain wariness of national security as a justification for global health objectives is warranted.

The emphasis in international health law on health security has certainly survived the dramatic 2005 revisions to the IHR, which expanded the scope of the

\textsuperscript{175} See, e.g., Garrett, \textit{supra} note 162, at 14 (“Tackling the developing world’s diseases has become a key feature of many nations’ foreign policies over the last five years, for a variety of reasons. Some see stopping the spread of HIV, tuberculosis (TB), malaria, avian influenza, and other major killers as a moral duty. Some see it as a form of public diplomacy. And some see it as an investment in self-protection, given that microbes know no borders.”); Jeffrey Goldberg, \textit{Microbes on the Move: West Nile Fever Could End Up Being the Least of New York’s Fears}, \textit{N.Y. Times Magazine}, Oct. 10, 1999, at 21, 22, available at http://www.nytimes.com/1999/10/10/magazine/the-way-we-live-now-10-10-99-microbes-on-the-move.html?scp=2&sq=&st=nyt (“West Nile, which is believed to be responsible for the deaths of at least five people here so far, is a warning shot. H.I.V., of course, is a particularly vicious warning shot. What we are being warned about is that ‘pathogens have no borders,’ says the Surgeon General, David Satcher.”); Barbara Sibbald, \textit{New Program Will Target 45 Million TB Patients in Next Decade}, 164 CANADIAN MED. ASS’N J. 1741 (2001) (“‘Microbes know no borders,’ says Ernest Loevinsohn, director general of CIDA’s Food Aid Centre. ‘We have to work overseas to protect Canadian health as well.’”).


\textsuperscript{177} See Ruger, \textit{Global Health Law}, \textit{supra} note 26, at 430; Gostin & Taylor, \textit{supra} note 117, at 55; Gostin, \textit{supra} note 115.


IHR in important ways.\textsuperscript{180} WHO made the World Health Day and World Health Report theme for 2007 (the year the revised IHR went into effect) “International Health Security.”\textsuperscript{181} “When the world is collectively at risk,” said Director-General Margaret Chan in a press release, “defense becomes a shared responsibility of all nations.”\textsuperscript{182} Contemporary emphasis on health security has attempted to reach beyond historical emphasis on the spread of communicable diseases across borders. Prominent advocates have argued that the health status of people in poor countries, broadly defined, should be an important national security concern for poor and wealthy nations alike and that wealthy countries have a national interest at stake in addressing health threats at their source, rather than merely preventing their spread at the border.\textsuperscript{183} In 2007, ministers of foreign affairs from Brazil, France, Indonesia, Norway, Senegal, South Africa, and Thailand issued a statement in Oslo noting the “unprecedented convergence of global health and foreign policy” in recent years and expressing hope that “[p]owerful synergies arise when national interest coincides with the need for concerted regional and global action.”\textsuperscript{184} Thus, advocates have sought to leverage national interest, particularly on the part of wealthy countries, to achieve international cooperation to combat health threats.

Shared vulnerability to transboundary threats to health is often held up as a source of solidarity in global health law and diplomacy.\textsuperscript{185} But this surface solidarity belies a continuing tension between the interests of wealthy populations and the needs of poor populations. B.S. Chimni, in his critique of what he has called “an imperial global state in the making,” has expressed concern that wealthy states “shape the form and content of the emerging global state” in ways that promote the interests of wealthy populations.\textsuperscript{186} Chimni and other scholars of the Third World Approach to International Law (TWAIL) school\textsuperscript{187} have

\begin{itemize}
  \item \textsuperscript{180} See IHR 2005, supra note 137.
  \item \textsuperscript{182} Id.
  \item \textsuperscript{184} Celso Amorim et al., Oslo Ministerial Declaration—Global Health: A Pressing Foreign Policy Issue of Our Time, 369 LANCET 1373, 1373 (2007).
  \item \textsuperscript{185} E.g., WHO, supra note 181.
  \item \textsuperscript{186} B.S. Chimni, International Institutions Today: An Imperial Global State in the Making, 15 EUR. J. INT’L L. 1, 6 (2004). Chimni argues that the global state is geared toward realizing the interests of the “transnational capitalist class,” made up of “transnational fractions of the national capitalist class in advanced capitalist countries with the now ascendant transnational fractions in the Third World playing the role of junior partners.” Id. at 4.
  \item \textsuperscript{187} See James Thuo Gathii, Alternative and Critical: The Contribution of Research and Scholarship on Developing Countries to International Legal Theory, 41 HARV. INT’L L.J. 263 (2000); Karin Mickelson,
discussed several global health issues as examples of how privileging the interests of wealthy populations in international law has been detrimental to the welfare of poor populations. These include the privileging of property rights over human rights in the context of access to medicines;\textsuperscript{188} the dominant influence of wealthy corporate interests in international food safety regulation under the Codex Alimentarum;\textsuperscript{189} the challenges of multilateral governance emerging out of the HIV/AIDS crisis;\textsuperscript{190} and the problem of cross-border transport and storage of hazardous waste.\textsuperscript{191}

Upon a "view from the South,"\textsuperscript{192} the focus on "global public health security"\textsuperscript{193} in international health law is in many respects tinged with an emphasis on securing wealthy populations against health threats believed to arise out of poor populations. Little concern is evident for the spread of disease within poor populations.\textsuperscript{194} As Larry Gostin and David Fidler have described this phenomenon, "geopolitical centers of power have acted as if it were possible to protect themselves from the endemic diseases of the developing world."\textsuperscript{195} In his critique of "health security" as a public health concept, William Aldis has similarly noted that "developing countries are increasingly suspicious of global health initiatives justified on grounds of 'global health security.'"\textsuperscript{196} Aldis warns that lack of recognition of this opposition on the part of academicians and policymakers in industrialized countries has the potential to stymie global health cooperation.\textsuperscript{197}

Growing wariness regarding the mission of the IHR among developing

\textit{Rhettoric and Rage: Third World Voices in International Legal Discourse}, 16 Wis. Int’l. L.J. 353, 360 (1998);
Makau Mutua, \textit{What is TWAIL?}, 94 A.S.I.L. PROC. 31 (2000);

192. Chimni, supra note 188.
194. This criticism was voiced by Oyewale Tomori, Vice Chancellor of Redeemer’s University in Nigeria, in a presentation at the Institute of Medicine Forum on Microbial Threats in December, 2008. Oyewale Tomori, \textit{IHR & Movement of Pathogens in a Globalized World}, Forum on Microbial Threats’ Public Workshop (2008), available at http://www.iom.edu//media/Files/Activity%20Files/PublicHealth/MicrobialThreats/Tomori.ashx ("[I]t is perceived by nationals of resource constrained countries, that with [the International Health Regulations], emphasis [sic] is on INTERNATIONAL SPREAD, with little concern for or about national spread of diseases."); see also Obijiofor Aginam, \textit{Between Isolationism and Mutual Vulnerability: A South-North Perspective on Global Governance of Epidemics in an Age of Globalization}, 77 Temp. L. Rev. 297, 302 ("Although countries often overreact to outbreaks of epidemics in other countries with trade, travel, and economic embargoes ostensibly to protect their populations, these embargoes are always more severe and isolationist when the disease or health threat emanates from a developing country.").
195. Gostin & Fidler, supra note 179, at 452.
196. Aldis, supra note 178, at 372.
197. See id. at 374.
countries is particularly concerning given that the success of the IHR depends largely on developing countries' commitment to building sufficient capacity for public health surveillance and response. The IHR require all member states to develop basic capacity for monitoring and responding to outbreaks of disease or other dangers that pose a threat of transboundary spread. Meeting these obligations will require considerable investment of resources in developing countries, much of which would be channeled toward high-tech infrastructure for monitoring and surveillance (e.g., information technology and laboratory infrastructure) rather than more basic public health interventions. In theory, financial assistance from developed countries should be forthcoming, but it may not be sufficient.

Part of the motivation behind the 2005 revisions to the IHR was a desire to move from controlling disease threats at the borders to addressing potential transboundary threats to health at their sources. During the revision process, Fidler described an ongoing shift from the horizontal objective of the pre-2005 IHR to the vertical approach of more recent WHO activities. The horizontal approach, focused on movement of infectious diseases between states, was primarily concerned with "managing the public health consequences of mechanistic state interaction for the benefit of the great powers' trading interests." In contrast, the vertical approach "reflect[ed] more interest in public health conditions within poor countries." Based on this shift, some have rightly pointed to the implementation of the revised IHR as holding potential for strengthening local health systems in ways that will be beneficial for local populations in

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198. See Fidler, Global Health Jurisprudence, supra note 117, at 411 (noting that "the IHR 2005's radical transformation of international law addressing serious public health threats will have no impact if developed and developing countries continue to have public health capabilities that are insufficient to handle the demands the IHR 2005 makes on them").

199. See IHR 2005, supra note 137, at Annex 1A.

200. See id. (imposing obligations to develop national capacity for rapid detection, investigation, and notification of potential public health emergencies, including provision of "support through specialized staff, laboratory analysis of samples (domestically or through collaborating centres) and logistical assistance (e.g., equipment, supplies and transport)"); Arielle Silver, Obstacles to Complying with the World Health Organization's 2005 International Health Regulations, 26 Wis. Int'l L.J. 229, 239-43 (2008); Eric Mack, The World Health Organization's New International Health Regulations: Incursion on State Sovereignty and Ill-Fated Response to Global Health Issues, 7 CHI. J. INT'L L. 365, 371 (2006).

201. See Dyna Arhin-Tenkorang & Pedro Conceição, Beyond Communicable Disease Control: Health in the Age of Globalization, in PROVIDING GLOBAL PUBLIC GOODS: MANAGING GLOBALIZATION 484, 486-87 (Inge Kaul et al. eds., 2003) ("In a period of great vitality in the scientific understanding of infectious diseases and of progress in medical technology—in vaccines for prevention and drugs for treatment—the WHO added eliminating communicable diseases at their sources to its mandate of containing their spread through its more traditional functions of coordinating international health regulations [pre-2005] and serving as an information clearing-house."). quoted in David P. Fidler, Constitutional Outlines of Public Health's "New World Order", 77 TEMP. L. REV. 247, 262 n.45 (2004).


203. Id.
addition to protecting their cross-border neighbors.\textsuperscript{204} One could easily argue that any investment by wealthy countries in the public health infrastructure of poor countries is a good thing, even if it is motivated by self-interest. And the shift toward addressing threats at their sources through a new international obligation to practice public health, as Fidler put it, could bring much needed attention to health systems strengthening in developing countries.\textsuperscript{205}

Emphasis on security, however, plays a significant role in dictating the priorities of international cooperation with respect to health, as Fidler himself has recognized.\textsuperscript{206} As described above, control of communicable infectious diseases that spread efficiently through casual human-to-human contact has been the primary subject of international health law since its inception. Even with their significantly broader scope, discussion of the purpose of the revised IHR and their implementation on the ground is still dominated by emphasis on communicable threats, with particular focus on disease threats for which effective treatment is not available, even in resource rich communities. SARS\textsuperscript{207} or a novel strain of pandemic influenza\textsuperscript{208} are excellent examples. Although the application

\textsuperscript{204} See, e.g., Jason Sapsin et. al., \textit{International Trade Agreements: Vehicle for Better Public Health?}, 33 J.L. MED. & ETHICS 111, 113 (2005) (comments from Ann Marie Kimball noting that the IHR "will seek to enfranchise poor countries to establish public health infrastructures"). \textit{See also} David P. Fidler, \textit{The UN and the Responsibility to Practice Public Health}, 2 J. INT'L L. & INT'L REL. 41, 56 (2005) (noting that "The IHR 2005's comprehensive disease scope means that the obligations on surveillance and intervention in this regime are now driven by global public health needs, not the trade interests of the great powers.").

\textsuperscript{205} Fidler, \textit{supra} note 204. Although one must exercise caution when making accusations of imperialism, Terry Nardin's comment on the humanitarian justification for imperialist interventions is perhaps instructive in this context as well: "In the old literature of empire, colonial rule was rationalized as providing backward peoples the benefits of civilization: public order, public health, modern communications, economic development, and eventually constitutional rule. The new literature of empire rationalizes intervention in similar terms." Terry Nardin, \textit{Humanitarian Imperialism}, 19 ETHICS AND INT'L AFFAIRS 21, 25 (2005), quoted in B.S. Chimni, \textit{The Birth of a 'Discipline': From Refugee to Forced Migration Studies} 22 J. REFUGEE STUD. 11, 23 n.23 (2009).

\textsuperscript{206} Fidler, \textit{supra} note 124, at 389 ("The strategy of global health security is essentially a defensive, reactive strategy because it seeks to ensure that States are prepared to detect and respond to public health threats and emergencies of international concern. The strategy does not require States go on the offensive against the factors that lead to disease emergence and spread. The new IHR are rules for global disease triage rather than global disease prevention.").

\textsuperscript{207} The SARS crisis of 2003 played a significant role in spurring negotiation on the revision of the IHR. \textit{See} World Health Assembly, Res. No. WHA56.28, Revision of the International Health Regulations, at para. 3(1) (May 28, 2003), \textit{available at} http://apps.who.int/gb/archive/pdf_files/wha56/ea56r28.pdf (resolution passed in the midst of the SARS crisis making revision of the IHR a "high priority" and urging member states "to provide resources and cooperation necessary to facilitate the progress of such work"). SARS was particularly concerning because it spread rapidly from developing countries like Thailand and China to wealthy industrialized countries like Canada and the United States. It was also deadly, and there was no vaccine or highly effective treatment available, regardless of resources. \textit{See, e.g.,} Fidler, \textit{supra} note 202.

\textsuperscript{208} Discussions of potentially pandemic H1N5 (avian) influenza have been prominent throughout IHR revision and implementation discussions. \textit{See, e.g.,} Alexandra R. Harrington, \textit{Germs on a Plane!: Legal Protections Afforded to International Air Travelers and Governments in the Event of a Suspected or Actual Contagious Passenger and Proposals to Strengthen Them}, 22 J.L. & HEALTH 295, 307 (2009) ("Concerns over the spread of avian or other forms of influenza, and their morphing into a pandemic exacerbated by air travel, permeate the IHR."). A public health emergency of international concern was declared for the first (and to date,
of the revised IHR to any "public health emergency of international concern" (PHEIC) would seem on the surface to indicate potentially significant relevance of the IHR to climate change, the way in which PHEIC is defined is more limited than the term might suggest. According to the Decision Instrument for Assessment and Notification of Events That May Constitute a Public Health Emergency of International Concern (Annex 2), an event detected by a national surveillance system triggers an obligation to notify WHO under the IHR primarily based on four criteria: (1) the seriousness of the public health impact; (2) whether the event is unusual or unexpected; (3) whether there is a significant risk of international spread; and (4) whether there is a risk of international restrictions on trade or travel.\(^{209}\) These factors are not weighed in a typical balancing test. Rather, they are applied through a very specific decision tree.\(^{210}\) The seriousness of the public health impact alone is not sufficient to trigger the IHR. Even if the public health impact of an event is serious, if it is not also unusual or unexpected, it triggers obligations under the IHR only where there is a threat of international spread or a risk of international restrictions (presumably based on the misperception of a threat of international spread).\(^{211}\) This provision is of particular relevance to some of the most major health threats in the developing world, especially those associated with environmental degradation. Ultimately, the types of threats that wealthy countries are able to protect themselves against effectively on their own are far less likely to trigger coordinated multilateral action.

Perhaps more importantly, in the context of health threats associated with environmental degradation and climate change, the entire structure of the IHR is built around the concept of event detection and response. In contrast, many of the impacts of climate change cannot be properly characterized as events at all. Public health concerns like the intensification of vector-borne infectious disease risk or population-level increase in asthma severity or increasing vulnerability to a whole host of illnesses due to worsening malnutrition are gradually emerging processes that play out over the course of years or even decades. An internationally coordinated surveillance system geared toward rapid detection of newly emerging diseases is a tool well suited for covert, quickly developing threats like biological terrorism or pandemic influenza. It is far less useful in the face of a slow process of environmental degradation.

For these and other reasons, security-based priorities do not map easily onto

\(^{209}\) IHR 2005, supra note 137, Annex 2 (The Decision Instrument for Assessment and Notification of Events That May Constitute a Public Health Emergency of International Concern.).

\(^{210}\) Id.

\(^{211}\) Id.
the needs of poor countries. Some health threats are far more likely to spread across borders than others. Some are properly understood as rapidly emerging events, while others defy such categorization. Many of the health threats that represent the greatest burden on health in the developing world are not of concern to wealthy populations. This is often because they are not efficiently transmitted through casual contact. For example, cholera is generally spread through infected food or water supplies; it is not generally something that you catch from someone seated next to you on an airliner. A related factor is that such health threats are easily controlled in places that have sufficient resources for and commitment to public health infrastructure. For example, cholera is in many respects a disease of failed governance, as it is easily preventable and treatable with fairly minimal commitment to public health infrastructure to provide safe and adequate water for drinking and sanitation. Contrary to the mantra that microbes know no borders, some health threats are in fact halted at the borders between the resource-poor and the resource-rich. Dengue fever, for example, though quite prevalent on the Mexican side of the U.S.-Mexico border, is well contained within populations in close proximity to the border on the U.S. side. Similarly, although the same hurricane might strike both the Haitian and Dominican Republic sides of the island of Hispaniola, monumentally more lives will be lost in Haiti. At the same time, the threats for which the IHR has the greatest relevance are not of significant concern to developing countries. Detection of

212. Gostin, supra note 115, at 334 ("The coincidence of national and global interests [with respect to improving global health] is much narrower than scholars claim.").

213. Notably, cholera is specifically mentioned in IHR 2005, supra note 137, Annex 2. Annex 2 notes that cholera and several other specifically named diseases (including certain vector-borne diseases) "shall always lead to utilization of the algorithm, because they have demonstrated the ability to cause serious public health impact and to spread rapidly internationally." In fact, however, the IHR were not called into play by the major cholera outbreak in Zimbabwe in 2008-09, despite actual cross-border spread of the disease into South Africa and Mozambique.

214. See Centers for Disease Control and Prevention, Traveler’s Health – Yellow Book, Chapter 5, Map 5.1 (2009, available at http://wwwnc.cdc.gov/travel/yellowbook/2010/chapter-5/dengue-fever-dengue-hemorrhagic-fever.aspx (depicting the geographic distribution of endemic dengue fever in the Americas); Mary M. Ramos, Epidemic Dengue and Dengue Hemorrhagic Fever at the Texas-Mexico Border: Results of a Household-Based Seroprevalence Survey, December 2005, 78 AM. J. TROPICAL MED. & HYGIENE 364 (2008). The Ramos study documented an estimated incidence of recent Dengue infection of 4% among Brownsville, Texas residents, compared to 32% among Matamoros, Mexico residents. The difference in estimated prevalence of past Dengue infection was somewhat less dramatic, but still quite significant: 39% among Brownsville residents compared to 77% among Matamoros residents. Id. Also notable is the finding that among Brownsville residents, those born outside the United States were three-times more likely to have experienced past Dengue infection than those residents who were native to the United States. Id. at 366. Locally acquired Dengue fever cases are nonexistent in the U.S. outside of a handful of counties that lie directly on the Mexican border.

215. See Rob Gutro, Hispaniola Was a Tropical Cyclone Target Five Times in 2008, NASA HURRICANES/TROPICAL CYCLONES (April 2, 2009), available at http://www.nasa.gov/mission_pages/hurricanes/archives/2009/haiti_landsat.html (describing the five tropical cyclones that swept the island of Hispaniola in 2008 and noting that approximately 800 deaths were attributable to the storms in Haiti while only two deaths were reported in the Dominican Republic).
emerging infectious diseases like SARS or biological or chemical weapons may be of great interest and concern to wealthy populations for whom such threats arouse considerable dread. But in poor communities, where many people are dying from easily preventable causes like diarrhea and malnutrition, these threats are less salient.

2. Treatment

a. Disease-focused Programs

Of course, not all of global health law and policy is driven by the security-based justification that underlies the International Health Regulations. International cooperation with respect to health has also been driven by charitable and moral motivations.\(^{216}\) Interest in global health has grown exponentially in recent years, as donor countries have increased their efforts to promote health in the developing world, and private donors like the Bill & Melinda Gates Foundation have made health a funding priority. Many have criticized these efforts, however, for focusing on certain high-profile disease threats like HIV/AIDS, tuberculosis, and malaria at the expense of addressing more universal upstream determinants of health or strengthening health systems.\(^{217}\) These weaknesses will be further exposed by the challenges associated with global climate change.

The downstream bias in health law and policy is intimately connected to the traditional division of health sciences and studies into disease-specific categories. The health impacts of climate change do not respect the traditional typologies of threats to health that structure everything from health sciences research, to the organization of health agencies at every level, to the priorities of public and private funding programs.\(^{218}\) Climate change will impact infectious disease, chronic disease, food security, food safety, and response to natural disasters.\(^{219}\) The lack of integration within the health sector among these distinct areas of study and intervention will pose a significant challenge to organizing a coordinated health adaptation response to climate change at the local, national, or international level. Law, policy, and governance approaches in the health sector have failed to keep pace with growing appreciation among health sciences researchers of the importance of upstream determinants of health. Indeed, the predominant expertise of the staff of the WHO is medicine, rather than public health or epidemiology. The scientific community has come to embrace an

\(^{216}\) Garrett, supra note 162, at 19.


\(^{218}\) Cf. Campbell-Lendrum, supra note 5, at 235–36.

\(^{219}\) See Part II.B., supra.
"ecological model" of health, which appreciates the ways in which a myriad of social, economic, and environmental features drive the dynamics of health and disease at the population level.\(^2\) Yet health law, policy, and governance are largely still mired in a "medical model" of health, which seeks to combat disease through treatment that focuses on individual health care.\(^3\) If governance structures were to fully embrace the ecological model, determinants of health—such as access to safe and potable water, or health behaviors such as intravenous drug use—might emerge as the salient categories around which policy interventions are organized. In contrast, under the current model, programs are typically organized around particular diseases or disease typologies—such as cancer, or chronic disease generally, or malaria, or HIV/AIDS.

Disease-focused programs have made significant efforts in recent years to promote more general health systems strengthening as a means of addressing particular disease burdens. The Global Fund to Fight AIDS, Tuberculosis, and Malaria has encouraged applicants for funding to incorporate health systems strengthening into their proposals, in recognition of "the importance of supporting the strengthening of public, private and community health systems where weaknesses and gaps in those systems constrain the achievement of improved outcomes in reducing the burden of HIV, tuberculosis and malaria."\(^3\) Similarly, the Global Alliance for Vaccines and Immunization (GAVI) has created a task force on health systems strengthening "to help countries overcome institutional bottlenecks and barriers that constrain productivity and progress in providing child and maternal health services."\(^4\) Efforts to coordinate among programs to promote aid effectiveness have also garnered attention in recent years.\(^5\)


ing health systems strengthening in a roundabout way via “mission creep” on the part of entities focused on specific diseases or outcomes is far from ideal.\(^2\) Just as the health security justification for international health cooperation has dictated priorities, aid programs aimed at particular diseases (such as AIDS, tuberculosis, and malaria) or specific interventions (such as immunization) are driven by their own particular priorities. Intervention-based organizations are necessarily focused on the relevance of health systems to the specific diseases or health outcomes that define their objectives. Their efforts have been focused largely on the strengthening of systems for delivering health care services or more medicalized public health services (such as immunization) rather than environmental interventions.\(^2\) They are also limited by the brief time frame of their efforts. For example, the President’s Emergency Plan for AIDS Relief includes an Annex devoted to health systems strengthening, but notes that in their use of PEPFAR funds, partner countries “should prioritize health system strengthening issues that can be addressed effectively during the 5-year timeframe.”\(^2\) Thus, efforts to address upstream determinants of health—which can be difficult to trace to any particular disease or health outcome and which operate on a longer time horizon—have not been as high a priority as they should be. Some donors, such as the Bill & Melinda Gates Foundation, rightly see these services as the


> Substantial risks lie in the assumption that because these global funds have demonstrated some success in relatively narrow areas means that they are suited for a far different challenge. GAVI has been a pioneer in trying to “do” [health systems strengthening] within an intervention-oriented program, and while it deserves recognition for making the effort the difficulties have been manifold . . . . On the part of the Global Fund, which reflexively reminds us all that it’s only a financing mechanism and has no aspirations toward offering technical expertise, the support of [health systems strengthening] has also faced significant obstacles with uncertain pay-off. And with both GAVI and Global Fund, is it not possible that venturing into the important but admittedly far ranging area of HSS would distract them from their central purpose? Have their boards really thought through how to mitigate the risks of “mission creep”?

Id.


\(^{227}\) The United States President’s Emergency Plan for AIDS Relief, Annex V: Health System Strengthening Priority-Setting, available at http://www.pepfar.gov/guidance/framework/120741.htm (last visited Apr. 20, 2010). The Annex also includes a number of examples of appropriate health systems strengthening priorities, all of which are focused on health care services and drug management cycle issues. Id.
proper provenance of governments and not compatible with their business model approach to health improvement.\textsuperscript{228} Unfortunately, however, they are precisely the same programs that are neglected by national governments as well.\textsuperscript{229}

\textit{b. Right to Health as a Right to Health Care}

Further entrenching the treatment bias in global health law, elaborations of the right to health have focused predominantly on the right to health care. Ben Meier’s work on the right to health points to codification of the right “during a unique and unrepresentative moment in the history of ideas surrounding health, leaving it inapplicable to current public health dilemmas.”\textsuperscript{230} The idea that the threat of infectious diseases could be eradicated through medical treatment with vaccines, antibiotics, and similar pharmaceutical countermeasures was particularly influential around the end of the Second World War.\textsuperscript{231} The influence of the medical model of disease coincided with the declining importance of the traditional command and control approaches upon which international health law relied,\textsuperscript{232} and with the emerging importance of human rights discourse with respect to health through the UDHR and the ICESCR.

Article 12 of the ICESCR recognizes “the right of everyone to the enjoyment of the highest attainable standard of physical and mental health,” and this formulation has since been used in several other international treaties and national constitutions. General Comment 14, in which the United Nations Committee on Economic, Social and Cultural Rights provided guidance on the implementation of the ICESR, specifically addresses the importance of upstream determinants of health.

\textquote{The reference in article 12.1 of the Covenant to ‘the highest attainable standard of physical and mental health’ is not confined to the right to health care. On the contrary, the drafting history and the express wording of article 12.2 acknowledge that the right to health embraces a wide range of socio-economic factors that promote conditions in which people can lead a healthy life, and extends to the underlying determinants of health, such as food and nutrition, housing, access to safe and potable water and adequate sanitation, safe and healthy working conditions, and a healthy environment.}\textsuperscript{233}

Nonetheless, as Meier has argued, “in pressing for the highest attainable standard for each individual, the right to health has been ineffective in compelling

\textsuperscript{228} See Global Health Watch 2, supra note 11, at 253.
\textsuperscript{229} See id. at 163–64 (describing the need for water and sanitation improvements as a “policy blind spot” for donors, despite the fact that poor people, when polled, prioritize safe water as among their greatest needs).
\textsuperscript{230} Meier, supra note 221, at 548.
\textsuperscript{231} See id.
\textsuperscript{232} Fidler, supra note 124, at 333–38.
\textsuperscript{233} General Comment 14, supra note 159, at para. 4.
states to address burgeoning inequalities in underlying determinants of health, focusing on individual medical treatments at the expense of public health systems. "234 Criteria for assessing fulfillment of the right to health under the ICESCR set forth in General Comment 14 are predominantly cognizable in the context of evaluating downstream, individualized interventions. General Comment 14 points to availability, accessibility, acceptability, and quality of health services as the key assessment criteria for the right to health. 235

In recent years, the paradigmatic case for advancing health and human rights jurisprudence has been the ongoing dispute surrounding a right of access to medicines on the part of HIV-positive patients in need of life-saving antiretroviral therapy. 236 Indeed, this issue has been hailed as returning the concept of health as a human right to the international stage. 237 This issue is extremely important. However, this understanding of the right to health as a right to medical treatment held on an individual basis is far afield of the collective-rights arguments that might be advanced on behalf of those in desperate need of basic sanitation and other essential fundamentals of health. Where regional human rights tribunals have explored the crucial connections between human rights, health, and the environment, their rulings have been somewhat circumscribed by unique contextual issues. The Inter-American Commission has recognized the effects of environmental degradation on health primarily in the context of indigenous people's rights to preservation of their culture. 238 The African Commission has
found a violation of the right to a healthy environment in a case in which there were also significant civil and political rights violations.\textsuperscript{239} Other cases are limited to informational or participatory rights. For example, the European Court has recognized a limited right to information about environmental health hazards under the right to respect for private and family life.\textsuperscript{240} These cases provide useful avenues for further exploration and development of a right to a healthy environment or healthy living conditions, but they have not been a significant focus of global health law.

V. THE EMERGING REORIENTATION OF GLOBAL HEALTH LAW TOWARD ENSURING HEALTHY CONDITIONS AND THE ROLE OF HEALTH ADAPTATION TO CLIMATE CHANGE IN SUPPORTING THIS TREND

A. THE DEMANDS OF HEALTH ADAPTATION: EQUITY, RESILIENCE, AND INTEGRATION

A recurring theme in this paper's assessment is that global health law is not currently fulfilling its potential for addressing the social and environmental conditions that will play such an important role in determining the impact of climate change on health. The last part offered a review of several relevant critiques of global health law as it is currently applied. This part points to a way forward by discussing the enormous potential of global health law to be applied in new ways. WHO set this process in motion with WHA resolutions defining its climate change agenda.\textsuperscript{241} In a 2008 resolution, the WHA called on the Director...
General to work with member states and other organizations in the UN system to ensure that health impacts are taken into account in the international response to climate change. WHA also urged member states to integrate public health capacity into their national adaptation plans. WHO has also entered into an official collaboration with the United Nations Environment Program (UNEP) through the Health Environment Linkages Initiative (HELI). HELI's first report, released in 2008, called for better integration of health and environmental decision-making at the international, national, and sub-national levels to address shared areas of concern.242

Recent developments in global health law suggest that it may already be moving in new directions that emphasize the importance of transboundary determinants of health. For example, the Framework Convention on Tobacco Control adopted in 2003 addresses globalized trade in hazardous tobacco products. Gostin’s proposed Framework Convention on Global Health seeks to address the effects on health of global economic disparities. This emerging shift from defending (mostly wealthier) populations against the transboundary spread of disease to defending (mostly poorer) populations against the health impacts of globalization will be crucial to global health law’s relevance to climate change adaptation. In turn, this shift toward health equity as a dominant concern of global health law alongside health security will require other simultaneous transitions as well. In particular, health adaptation to climate change will demand greater integration of health and environmental governance at the international, national, and subnational levels.243 More broadly, integration of health law and governance with other non-health fields is an essential element of addressing the upstream environmental, social, and economic determinants of health. In addition, health adaptation will require a more open framework for addressing the “non-events” of climate change’s health impacts (i.e. more gradual intensification of health threats) alongside the more discrete public health emergencies that global climate change is likely to precipitate. There are two key themes, therefore, that I propose for supporting global health law’s relevance to global climate change. First, it must be equity-based. Secondarily, and in support of that primary goal, it must emphasize integration with other fields and long-term resilience rather than emergency preparedness alone.

At the heart of the turn from “international health law” to “global health law” was a concern about the “entrenched power structures” reinforced in international health law.244 But of course simply reframing the discourse is not sufficient

243. See, e.g., Onzivu, supra note 169, at 660.
to bring about a fundamental shift in power. The effort to ground global health law in the normative foundation of social justice is very much a work in progress. Environmental degradation greatly exacerbates health disparities among nations and among communities within nations. A meaningful response to the health threats associated with global environmental change will thus require that global health law more fully realize its commitment to social justice. The ideal of multilateral cooperation to combat common health threats that are beyond the reach of any individual state is undermined by environmental health threats. The threats associated with climate change and environmental degradation affect states differentially and are, to a considerable extent at least, imposed by one set of states upon another. Whether a stronger shift toward health equity as a driving normative force in global health law is fully compatible with the powerful influence of health security is, at this point, unclear. The ongoing development of right to health jurisprudence offers an important path forward in this regard. Although downstream issues surrounding access to care and medicines have dominated this discourse, the interest these issues have generated might be channeled into greater awareness of other issues at the health and human rights nexus. Advocacy groups concerned with human rights have begun to sketch out an agenda for a human rights approach to climate change. Their framing of the issue has emphasized some of the same core social, economic and, cultural rights that go to the heart of upstream determinants of health.

It may also be possible to move debate over potentially competing priorities forward by addressing the tension more explicitly. Aldis’s critical analysis of health security as a public health concept points to a disconnect between how policymakers in industrialized countries understand the term “health security” and how the term is understood by health workers and policymakers in the developing world. Policymakers representing the interests of wealthy populations generally frame health security as a matter of “protection of their populations especially against external threats, for example terrorism and pandemics.” This emphasis on health security as a concept related to national security is in tension with the very different understanding of health security as a concept related to human security—with an emphasis on human rights and human development—among those concerned with the interests of the developing world. An essential question for determining the usefulness of existing global health law structures as tools for health adaptation to climate change is whether the tension between these two conceptions of health security is irresolvable. Is it possible to

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247. *Id.*
249. *Id.* at 370.
reconcile wealthy populations’ efforts to protect themselves from threats that are perceived to be external with poor populations’ efforts to ensure equitable access to health care and healthy conditions?

Of course, reframing the debate will not, in itself, shift power from developing countries to industrialized countries. But IHR implementation may be emerging, like climate change law, as an area where developing countries find themselves in a paradoxically powerful negotiating position. IHR implementation relies heavily on developing countries’ willingness to devote resources to particular capacity building efforts. IHR proponents may be taking advantage of the conflation of differing conceptions of security. Developing countries’ efforts to highlight this conflation may put them in a better position to bargain for true reciprocity in the form of substantial funding for the capacity building efforts required by the IHR.250

Perhaps one of the more entrenched aspects of global health law that will limit its effectiveness as a climate change adaptation tool is its emphasis on public health emergency preparedness, rather than long-term resilience.251 Although the IHR, for example, has a new focus on addressing disease threats at the source, rather than merely at the borders, and are now applicable to threats other than communicable disease outbreaks, they are still strongly event-focused. To the extent that funding is made available for the implementation of the IHR in developing countries, however, concerns about global climate change would argue in favor of building public health capacity along lines that would be beneficial in the face of more gradually emerging health threats, as well as public health emergency events. Implementation of the 2005 revisions at the regional, national, and sub-national level may be creating new opportunities for the development of public health law and practical capacity. As Genevieve Howse has detailed in her proposal for a model public health law for the Pacific region, implementation of the revised IHR is prompting a reexamination of national-level public health laws.252 In addition to reform of outdated and inappropriate domestic public health laws, IHR implementation may also be prompting countries to seek out regional arrangements for cooperation and capacity sharing.253 Reviews prompted by IHR compliance have largely focused on IHR

250. Id. at 372. Aldis describes resistance by Brazil, India, Indonesia, and Thailand to the use of the term “global health security” during a meeting of WHO’s Intergovernmental Meeting on Influenza Viruses and Benefit Sharing. The disagreement took place during discussion of a draft statement regarding Indonesia’s refusal to share virus isolates from human cases of H5N1 influenza infection, an action that Indonesia had justified on the grounds that its citizens were unlikely to receive any benefits in the form of vaccines or transfer of technologies that might be developed using the isolates. A representative of Portugal had proposed that “global health security” should prevail over other laws. Brazil continued to challenge use of the term “global health security” during a discussion of IHR implementation at a 2008 WHO Executive Board meeting. Id.

251. Cf. Wiley, supra note 8 (discussing the need to move from a preparedness approach to one emphasizing long-term resilience in the context of U.S. public health law).

252. See Howse, supra note 166.

253. See id.
driven content, but Howse’s project provides a model for more comprehensive public health law reform. A comprehensive review, even if it is motivated in part by security concerns, has the potential to update public health law in a wide variety of ways. William Onzivu’s work provides several examples of how environmental health concerns might be integrated into public health law, policy and, governance mechanisms in the course of comprehensive reform. Given that IHR implementation focuses particularly on epidemiological surveillance, Onzivu’s call for approaches that integrate surveillance of climatic and environmental conditions as well as human cases of illness or injury is particularly relevant.

Finally, as Gostin and others have noted, one of the key issues preventing global health law from achieving its full potential is the lack of integration of health concerns into law and governance regimes in related fields. WHO has “shied away from the ‘high politics’” of “[the] much larger body of international law that powerfully affects global health in areas ranging from food safety, arms control, and the environment, to trade and human rights.” At the same time, law and governance regimes in these related fields have not made health a primary concern. Lack of integration across law and policy regimes is, of course, a key challenge of climate change governance as well. Coordination among the various sectors ranging from health and environment to transportation, energy, and agriculture is crucial to climate change mitigation and adaptation alike. Integration is an enormous challenge presented by the problem of global climate change, but it is also a significant opportunity. As policymakers at every level of government increasingly turn their attention to the problems of climate change adaptation, a number of promising examples are emerging of innovative approaches to integrating health, environmental, and other agencies and programs to address common concerns. These range from regional coalitions for natural disaster preparedness as a climate adaptation measure in Asia, to national-level response plans like the English heat wave plan, to climate change action plans and heat wave plans promulgated by states and cities in the United States. The shift toward addressing adaptation approaches to climate

254. See Onzivu, supra note 8.
255. Id. at 1320.
256. Gostin, supra note 115, at 378.
257. Wiley, supra note 3.
259. See National Health Service, Heatwave Plan for England (May 12, 2009), available at www.schoolshealthandsafety.co.uk/CYPD/Misc_html/HEATWAVE%20PLAN%202009.pdf (setting forth guidelines for the National Health Service during heat wave events and also requiring multi-agency planning, particularly on issues involving the built environment and greening or shading).
change alongside mitigation approaches has not been without controversy. One of the benefits of increased focus on adaptation, however, has been that it has brought a much wider range of actors to the climate change table.\textsuperscript{261} The synergies among health, environment, development, and human rights initiatives provide fertile ground for new approaches to addressing climate change and other upstream determinants of health.

B. EMERGING DEVELOPMENTS

Of course, while part of assessing the usefulness of global health law as a tool for health adaptation to climate change should be an examination of existing structures like the IHR, it is also essential to point toward new directions for global health law that might lead to development of wholly different structures. Some hope for movement of global health law in new directions can be found in recent developments, particularly the Framework Convention on Tobacco Control (FCTC),\textsuperscript{262} adopted in 2003. The FCTC addresses a wide range of issues related to advertising, marketing, and consumption of tobacco products, as well as related research and information sharing. Tobacco control is obviously far less relevant to the health impacts of climate change than infectious disease control or measures relating to public health emergencies. The FCTC, however, is important to the discussion of health adaptation to climate change in two ways. First, it signals increasing interest in international cooperation to address chronic diseases alongside more established efforts aimed at communicable diseases. Second, it may be taken as an example of international cooperation on a health issue where the transnational aspect of the threat is its \textit{source} (the tobacco industry)\textsuperscript{263} rather than its potential to \textit{spread}. The impetus behind the FCTC is not that tobacco-related illness will be transmitted across borders the way infectious diseases spread, but rather that member states are facing a common

\textsuperscript{261} Wiley, \textit{supra} note 3.

\textsuperscript{262} See WHO Framework Convention \textit{supra} note 145.

\textsuperscript{263} See Ruger, \textit{Global Health Law, supra} note 26, at 436 ("The need for a global tobacco control treaty was clear from the numerous international factors associated with tobacco use, including trade liberalization, direct foreign investment, global marketing and advertising, and international sales of contraband and counterfeit cigarettes."); Allyn L. Taylor & Douglas W. Bettcher, \textit{WHO Framework Convention on Tobacco Control: A Global "Good" for Public Health, 78 BULL. WORLD HEALTH ORG. 920 (2000) (discussing the globalization of the tobacco epidemic).
threat. The FCTC could arguably be cast as a precedent for the type of cooperation with respect to health that will be required in the face of climate change.

Larry Gostin’s groundbreaking proposal for a new Framework Convention on Global Health\textsuperscript{264} (FCGH) is particularly timely in light of the growing health burden of environmental degradation and is extremely relevant to health adaptation to climate change. Gostin argues that “[w]hat is truly needed, and what richer countries instinctively (although not always adequately) do for their own citizens, is to meet . . . ‘basic survival needs.’ By focusing on the major determinants of health, the international community could dramatically improve prospects for good health.”\textsuperscript{265} Gostin defines “basic survival needs” to include many of the issues that will be crucial to addressing the health impacts of climate change, including sanitation, vector control, clean air and water, and functioning health systems.\textsuperscript{266} In many ways, the FCGH proposal builds on what has been achieved in the FCTC. Obviously, it borrows the framework convention approach to treaty-making,\textsuperscript{267} but it also further extends the argument for international cooperation to address determinants that threaten cross-border spread, not just pathogens. As Gostin argues, “[t]he determinants of health (pathogens, air, food, water, even lifestyle choices) do not originate solely within national borders. Health threats inexorably spread to neighboring countries, regions, and even continents. It is for this reason that safeguarding the world’s population requires cooperation and global governance.”\textsuperscript{268} By focusing on health as an essential component of human security rather than national security, the FCGH proposal bridges a crucial gap between health initiatives and development initiatives. Provisions of the FCGH emphasizing basic survival needs promote precisely the kind of upstream-focused approach that should be paramount in health adaptation efforts.

C. THE ROLE OF COMMON BUT DIFFERENTIATED RESPONSIBILITY

It is also possible that new structures specific to health adaptation to climate change might be developed under the auspices of the UNFCCC that would themselves become an integral component of the emerging body of global health law. Global climate change adds a new element to the responsibility of the wealthy for the ill health of the poor. As Müller describes, “the chief victim of climate change is not ‘Nature,’ but people, and the paramount inequity is one

\textsuperscript{264} Gostin, supra note 115.
\textsuperscript{265} Id. at 334.
\textsuperscript{266} Id.
\textsuperscript{267} See generally, e.g., SCOTT BARRETT, ENVIRONMENT AND STATECRAFT: THE STRATEGY OF ENVIRONMENTAL TREATYMAKING 133–164 (2003) (describing the development and use of framework conventions in international environmental law).
\textsuperscript{268} Gostin, supra note 115, at 333.
between human victims and human culprits.” The potential of health adaptation to be driven by health equity, rather than health security, is derived not only from a latent moral obligation to preserve the dignity of fellow humans but also from more direct responsibility for the global environmental changes that brought about their poor condition. Indeed, as global health law becomes more fully integrated into the project of climate change adaptation under the auspices of the UNFCCC, the UNFCCC’s driving normative principle of “common but differentiated responsibility” may play a role in shaping the contours of global health law’s commitment to social justice. International climate change law and governance could go a long way toward supplying the “full sense of ethical or legal obligation” that is required for meaningful action by wealthy countries to meet the basic survival needs of the world’s least healthy people.

The principle of “common but differentiated responsibility” (CBDR) that is the foundation of the UNFCCC has been discussed predominately in the context of mitigation efforts, where it essentially means that “while all countries must join in efforts to reduce emissions of greenhouse gases that contribute to climate change, the developed countries are required by the Climate Convention to take the lead.” According to the text of the UNFCCC, however, CBDR applies not only to mitigation obligations, but also to adaptation obligations.

The legal obligations encoded in the climate change conventions, which require disparate contributions to mitigation and adaptation, stem from pragmatic reality rooted in ethical obligation. Pragmatically, those nations who have the resources to mitigate and help others adapt bear primary responsibility to do so; ethically, because those resources are derived from activities that pollute(d) the global commons, polluting nations should bear the primary responsibility to clean up the global atmospheric commons and help others adapt to the mess we have made en route to economic ascendancy.

269. See Stone, supra note 72, at 276.
270. Gostin, supra note 115, at 334 (“When rich countries do act, it is often more out of narrow self-interest or humanitarian instinct than a full sense of ethical or legal obligation.”).
273. See UNFCCC, supra note 2, art. 3.1 (“The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof.”) (emphasis added).
274. David Takacs, Carbon into Gold: Forest Carbon Offsets, Climate Change Adaptation, and International Law, 15 HASTINGS W.-NW. J. ENVTL. L. & POL'y 39, 40 (2009) (emphasis added); See also Hodgkinson et al., supra note 64 (proposing a new convention for persons displaced by climate change, under which parties would provide assistance “on the basis of equity and, as a principle, in accordance with their common but differentiated responsibilities” developed state parties would bear a disproportionate share in the provision of assistance).
International cooperation for health adaptation to climate change, undertaken in accordance with CBDR, would be responsibility-based. There is thus potential for the priorities of adaptation assistance to be very different from the priorities that have driven international health law and global health governance in the past, under a security-based justification. Health adaptation to climate change could make health equity, rather than health security, its driving normative force. Furthermore, because of the particular characteristics of the health impacts of climate change, health adaptation has the potential to be more responsive to the needs of the poorest and least healthy people in the world. Health adaptation argues for core, environmental, public health interventions that have been woefully under-addressed by past global health cooperation efforts.

VI. CONCLUSION

The approaches roughly sketched out in the previous section would benefit global health law’s relevance to the project of climate change adaptation and are normatively compelling as well. They would make global health law more responsive to the social justice implications of global health. A confluence of factors could make health adaptation to climate change a critically important moment in the development of global health law and governance. The types of health threats we are likely to see as a result of climate change differ in important ways from the types of health threats that have dominated global health law and governance in the past. Emerging research about how climate change is likely to intensify existing environmental threats to health argues in favor of core, environmental interventions focused on upstream determinants of health like access to safe water and sanitation, nutrition, and shelter. In turn, these interventions have enormous potential to bridge the incredible health disparities between the global poor and the relatively well-off. In coming years, there is an opportunity for global health law and governance to take on the project of supporting these interventions through laws and policies that prioritize equity-based, resilience-focused approaches and the integration of health sector responses with the efforts of other sectors.

The potential of health adaptation to climate change to move global health law toward greater consideration of the upstream determinants of health is only that: potential. It is certainly possible that the international community will respond to climate change with the same modes of treatment-focused and security-based interventions that have been privileged in the past. The process of roughly outlining what health adaptation to climate change is going to mean at the policy level, as well as on the ground, is only just beginning. Global health law scholars, as well as those interested in social justice more broadly, should engage with these developments now, while there are still significant opportunities to define the paradigms that will channel funding and reform efforts.