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Mitigation/ Adaptation and Health: Health Policymaking in the Global Response to Climate Change and Implications for Other Upstream Determinants

Lindsay F. Wiley

I. Introduction

In coming decades, enhanced global health governance will be crucial to achieving international health and development objectives in the face of a number of challenges;¹ this article focuses on one of them. Climate change, which is now widely recognized as the defining challenge of the 21st century,² will make the work of ensuring the conditions in which people can be healthy more difficult in a myriad of ways.³ Scientists from both the health and climate communities have been highlighting the significant interaction between climate and health for decades and have made significant strides in integrating health and environmental research.⁴ Those of us in the law and policy community have been a bit slow to catch up, and have only just begun to call for better integration of our responses to health and environmental concerns.⁵ Environmental health specialists at the World Health Organization have recently pointed to a mandate for better integration of health and environmental concerns within the United Nations system.⁶ The Millennium Development Goals interweave health, environmental, and development concerns.⁷ The current U.N. Secretary General Ban Ki-Moon has named climate change and development to promote global health as key priorities.⁸ The World Health Assembly passed an important resolution recognizing the importance of climate change as a threat to global health and calling on the health community to protect health from climate change.⁹ But despite this mandate there is virtually no representation of the health sector at the ongoing negotiations during the annual Conference of Parties to the United Nations Framework Convention on Climate Change (UNFCCC).¹⁰ Shockingly few health-focused projects have been submitted to the UNFCCC for available funding opportunities.¹¹ Despite emerging efforts to better integrate health and environmental objectives in international law and policy, scientists, policymakers, and advocates in these two fields remain regrettably cut off from each other.

Although international efforts to regulate greenhouse gas (GHG) emissions have been stymied by the failure to reach consensus at the UNFCCC Copenhagen conference in 2009, the global response to climate change continues to move forward along somewhat more diffuse and indirect pathways at the international, national, and sub-national levels. As momentum builds, health advocates and policymakers are missing important opportunities to protect global health both by preventing devastating climate change from occurring ("mitigation" in the language of the cli-

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mate community) and by strengthening the resilience of human systems to protect us from the impacts of climate change (“adaptation”). In addition to ongoing work to reduce emissions as a mitigation strategy, the global environmental law and policy community is now turning to the task of setting an agenda for adaptation. Adaptation requires a very different set of law, policy and governance tools than environmental policymakers have typically employed in their mitigation efforts¹² and it touches on substantive concerns that range far beyond the traditional domain of environmental law.

Climate change and other forms of environmental degradation pose a serious threat to the progress made toward global health and development goals in recent decades.

The global health law and policy community thus has a responsibility to get up to speed on climate change so that it can inform mitigation efforts and, as necessary, drive the process of setting an agenda for “health adaptation” to climate change.

My argument is two-fold: health must play a greater role in climate change governance and climate change must play a greater role in health governance. The call for integration is being heard, but to properly heed it will require that we carefully consider our health and environmental priorities and set forth a mutually beneficial agenda for protecting both. There is an additional advantage that the global health community stands to gain by engaging more fully with the global response to climate change. The mitigation/adaptation response paradigm currently evolving both within and beyond the UNFCCC is a potentially powerful framework for thinking about the integration of health and environmental concerns more broadly. It may even be a useful way of thinking about global health law and governance with respect to other upstream determinants of health.

In the next part, I review the current and anticipated impacts of climate change on human health. Part III points to opportunities for better integration of global health concerns into the international response to climate change under the auspices of the UNFCCC and beyond. Health concerns can and should play a role in motivating the political will necessary to undertake major efforts in a variety of sectors to mitigate climate change and ensuring that the mitigation regime takes full advantage of potential co-benefits for health.

Health objectives should also play a key (and possibly dominant) role in establishing priorities for climate change adaptation. In Part IV, I turn to the task of integrating climate change adaptation into global health governance, setting forth an agenda for global health that is mindful of the challenges posed by climate change. Because climate change is expected to exacerbate many of the threats to health that current approaches to global health law and policy have not adequately addressed, new approaches are called for. I argue that health adaptation to climate change weighs in favor of the novel proposals discussed in this volume for a Committee C of the World Health Assembly and for a new Framework Convention on Global Health. I also argue more generally that a global health policy orientation grounded in human rights is well suited to addressing the impacts of climate change on the world’s least healthy people. Finally, in Part V, I tentatively explore the potential of the mitigation/adaptation paradigm as a framework for thinking about global health governance with respect to environmental degradation more generally as well as other upstream determinants of health.

II. Climate and Health

Climate change and other forms of environmental degradation pose a serious threat to the progress made toward global health and development goals in recent decades. Climate change is expected to deal a potentially devastating blow to several important upstream determinants of health. It will have direct effects on environmental determinants, especially exposure to natural disasters and disease-carrying vectors, access to safe and potable drinking water, and food security. It will also have an indirect effect on health through its impact on economic growth¹⁶ and social stability.¹⁷ Climate change acts primarily as an intensifier¹⁸ and to some extent a redistributor of existing threats to health. Some linkages between climate and health are fairly obvious, such as the impact of weather-related natural disasters. Others are less obvious and may be neglected by policymakers. These include the indirect impacts of natural disasters, especially on mental health, as well as other linkages that affect both infectious and chronic disease.

Obviously, climate change is partly about global warming. In addition to higher average temperatures, we are likely to see increasing frequency and severity of heat waves.¹⁹ Although dramatic news reports about hurricanes and tornadoes may lead the public

to believe otherwise, heat waves are in fact the leading cause of weather-related deaths in the U.S. and many other places.²⁰ Heat also poses less direct threats to health. Air pollution — especially ground-level ozone, or smog, caused by the combustion of fossil fuels — will be exacerbated by higher temperatures with resulting impacts on cardiovascular and respiratory illness.²¹ The devastating impact of sustained high temperatures combined with extensive wildfires and resulting air pollution was illustrated in the Moscow in the summer of 2010.²² Food-borne illness is also expected to increase due to higher temperatures.²³

In many ways, the most concerning impact of climate change, from a health standpoint, is its effect on water. Climate change is not merely global warming. Higher average temperatures set off a domino effect that can result in major regional shifts in the water cycle.²⁴ Lack of regular access to safe, adequate water for drinking and sanitation has a myriad of consequences for health.²⁵ At the same time, periodic droughts will lead to an increase in frequency and severity of wildfires with resulting injuries and impacts on air pollution.²⁶ Periodic flooding will bring its own risks to health through direct injuries and exposure to waterborne diseases as well as ecological impacts on insect, rodent, and other vector populations that temporarily increase human exposure to the infectious diseases they carry.²⁷ Regional changes in temperatures and rainfall will also result in more permanent shifts in the geographic range of mosquitoes and other vectors.²⁸ Illnesses like malaria and dengue fever may spread to higher latitudes and altitudes, threatening human populations that are naïve to these diseases and thus particularly vulnerable to complications.²⁹

III. Integration of Global Health into Climate Governance

Mitigation

After two decades of slowly building momentum, the international response to climate change reached a crucial turning point in 2009. As a framework convention, the 1992 UNFCCC established the goal of stabilizing atmospheric GHG concentrations at a level that would prevent dangerous climate change within a time frame that would allow for natural adaptation of ecosystems, protection of food production, and sustainable economic development.³⁰ It did not itself create significant legally binding obligations when it went into effect in 1994. The Kyoto Protocol was adopted in 1997 and set forth binding emissions reduction targets that went into effect in 2005 for those states that ratified it.³¹ The mitigation regime established under Kyoto has been widely regarded as a failure,³² in part because of the refusal of the United States to ratify the

protocol³³ and in part due to controversy over whether those countries that did ratify are likely to fall far short of the modest targets it contains.³⁴ In any case, the commitments contained in the Kyoto Protocol expire in 2012 and in recent years the UNFCCC member states have focused on negotiating a successor mitigation regime.³⁵ The 2009 UNFCCC Conference of Parties on Copenhagen was widely hailed as the last best opportunity to negotiate a legally binding GHG reduction regime with meaningful potential to avoid devastating climate change.

Ultimately, however, negotiations broke down and Copenhagen ended without a comprehensive agreement. Several months later, after the House passed historic climate legislation and several Senate bills were under consideration, the United States Congress ultimately abandoned hope of achieving comprehensive climate legislation in the near future.³⁶ Brazil and Australia have also delayed implementation of national climate legislation.³⁷ Despite these serious setbacks, however, the global response to climate change is moving forward in small but significant ways. Most notably, Copenhagen marked an increased willingness of several key rapidly industrializing countries to discuss eventual commitment to mitigation targets. Brazil, South Africa, India, and China have continued to meet in 2010 following their joint efforts to hammer out the Copenhagen Accord in 2009. At least some of these countries may be on the verge of taking steps to operationalize the commitments they made in the Accord.³⁸ It would be a mistake for health advocates to turn their backs on the important issues at the intersection of climate and health at this crucial juncture. Now more than ever, highlighting the serious health impacts of climate change should continue to play a growing role in motivating the political will necessary to mitigate its extent. The failure of consensus at Copenhagen, while certainly regrettable, has opened up new opportunities for health policymaking as the global response to climate change moves forward more slowly and through more diffuse routes.

Adaptation

In the aftermath of the failure to adopt a successor mitigation regime at Copenhagen, adaptation has continued to be an area where progress is being made by UNFCCC working groups. Unlike mitigation efforts, which seek to prevent climate change or at least reduce its extent, the adaptation response assumes that at least some degree of dangerous climate change will occur and seeks to strengthen natural and human systems in anticipation of coming changes. Financial and technical assistance for adaptation in developing countries is closely tied to

the negotiation of a mitigation regime. Developing countries indicated at a 2007 summit that their willingness to take on obligations with respect to mitigation depended upon the availability of significantly more funding from developed countries for adaptation.³⁹ During the lengthy build-up to the 2009 Copenhagen conference, while mitigation efforts were put on hold in anticipation of upper-level negotiations, UNFCCC working groups turned increasingly to the topic of adaptation of human systems to increase our resilience to the impacts of climate change. In 2005, UNFCCC member states began the Nairobi Work Program on Impacts, Vulnerability and Adaptation.⁴⁰ In 2006, they negotiated the establishment of the Kyoto Protocol Adaptation Fund.⁴¹ The Fund is generated by a two percent tax levied on permits created through emission offset projects undertaken by private investors in the developing world. This innovative funding mechanism has the potential to create an adaptation budget that could be as much as five times the budgets of the two previously created climate change funds, which relied on direct funding from donor countries.

In the accord reached in Copenhagen, some countries agreed to a short-term financing goal of approximately \$80 billion for the period from 2010 to 2012, for both mitigation and adaptation assistance, and a long-term goal of \$100 billion by 2020.⁴² The accord has not gained widespread consensus, however. Whether these funds would flow through the Adaptation Fund is not clear,⁴³ but the Fund's board has continued to make progress on its mandate in the months following the Copenhagen summit.⁴⁴ Despite this progress, there continues to be a major implementation gap with respect to the UNFCCC's adaptation response. Pledged funds are insufficient and not always forthcoming and the infrastructure required to take advantage of these funds is not in place in many of the poorest countries.⁴⁵ The harms of climate change will in many respects be greatest in some of the poorest parts of the world and the people in these areas are least well equipped to deal with coming changes.

The Role of Global Health

Even as the UNFCCC and individual jurisdictions have ramped up their mitigation strategies and taken on the additional challenge of adaptation, health has not been given the status that it deserves as a major impact of climate change. The impact of climate on health has the potential to shape climate policy in two main ways: first, by motivating the political will needed to enact effective mitigation measures quickly enough to reduce the severity of climate change; and

second by shaping the priorities for adaptation to climate change that is already certain to occur. Despite increasing emphasis on the climate-health nexus among the climate community, representatives from the health sector have not been active in the UNFCCC negotiations.⁴⁶ Environmental governance structures at the national and international level have largely failed to include health advocates and policymakers in a coordinated response to environmental health threats.⁴⁷

The global health advocacy community must become more engaged in the negotiation of key decisions that will be undertaken in coming years with regard to coordination of an international response to climate change and national-level implementation of international commitments. As member states seek to achieve new targets under the UNFCCC and its protocols, health advocates have a role to play in arguing for more rapid action to prevent devastating climate change and for adaptation approaches that focus on global health infrastructure. Policymakers, advocates, and scholars alike have noted that putting a human face on climate change could be the key to motivating the massive political will that will be required to effectively respond to climate change.⁴⁸ But beyond these broad strokes and general references to the connection between climate change and global health, what are the concrete opportunities for health advocates to influence the international response to this emerging threat?

In addition to providing a more compelling justification for climate change mitigation, health concerns might shape the contours of an emissions trading mechanism. For example, many sources of GHG emissions have harmful direct effects on health that go beyond their indirect effect through climate change. On the flip side, mitigation measures currently under discussion, such as the development of cleaner energy sources and improved land use and urban planning approaches that emphasize public transportation have significant co-benefits for health. Approximately 800,000 deaths per year are attributable to outdoor air pollution, which is largely an effect of fossil-fuel burning for power generation and by automobiles.⁴⁹ Approximately 1.5 million deaths a year are attributable to indoor air pollution, particularly in the developing world where solid fuel is often burned for heating and cooking inside the home.⁵⁰ Additionally, 1.9 million deaths a year are attributable to lack of physical activity, which could be improved by increased emphasis on public transportation.⁵¹ Health advocates might also play a role in pointing to potential co-benefits of measures in other sectors where non-point sources of GHG emissions have been neglected.

Deforestation, for example, has harmful effects on health in nearby communities in addition to its effect on the global environment.⁵² Similarly, industrial agricultural operations can have deleterious effects on air and water quality for surrounding communities.⁵³ The Pew Center on Climate Change has coordinated health and environmental concerns in its proposal for incorporating nonpoint sources of GHG emissions into a sectoral approach to mitigation so as to encourage and subsidize sustainable land use practices, which offer relatively low-cost opportunities for emissions reduction.⁵⁴

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Health advocates may be missing an opportunity to influence negotiations on what sorts of projects will be awarded funding through the Adaptation Fund. Many potential climate change adaptation projects, such as the development of better disease surveillance and response capacity, improvements in sanitation and protection of food and water security, and the strengthening of natural disaster preparedness and response capabilities look a lot like traditional international health initiatives. "The necessary preventive actions to deal with most climate-sensitive diseases are already well known. Strengthening these actions would help save lives now (the goal of health protection) and reduce vulnerability to climate change in the future (the goal of adaptation)."⁵⁵

The global health community has a responsibility to inform and, as necessary, drive the process of setting an agenda for health adaptation. The law, policy, and governance tools required for successful adaptation to climate change are really quite different from those traditionally employed by environmental lawyers and policymakers in mitigation approaches. It may be that other policy communities with a longer experience in promoting the resilience of human and social systems, including the global health community, are better suited to the task of adaptation priority-setting in their respective sectors. In addition to guiding health adaptation to climate change, the global health community has a responsibility to evaluate measures in other sectors in light of their impact on health. As the threat of climate change forces policymakers to consider fundamental changes to energy, transportation, land use, urban planning, and food and water

supply and consumption, these measures will need to be evaluated in light of their impacts on human health and wellbeing. The UNFCCC commits member states to minimizing the public health impacts of measures undertaken to mitigate or adapt to climate change.⁵⁶ Wastewater usage⁵⁷ and rainwater collection,⁵⁸ introduction of genetically modified crops,⁵⁹ and increased reliance on nuclear power⁶⁰ all have the potential to help us mitigate and/or adapt to climate change, but they come with potential health risks that can be difficult to assess. These health risks may be easily under- or over-estimated by policymakers, leading to irrational policy choices.⁶¹ Health adaptation measures themselves can also come with tradeoffs that must be evaluated. The trade-off between vector-pest-control and exposure to potentially harmful pesticides, for example, has been particularly challenging for policymakers to assess.⁶²

At the same time, the majority of mitigation strategies — such as increased use of cleaner energy technologies and more efficient public transportation — have significant co-benefits for health.⁶³ Highlighting these synergies may help build political will for their adoption. The health sector should play a role in informing the choices among various alternative strategies to mitigate climate change in a way that maximizes co-benefits for health.

IV. Integration of Climate Change into Global Health Governance

In addition to working to integrate health concerns into climate governance, health advocates must also reexamine the priorities of global health law and policy in light of the likely impact of climate change. In recent years, health advocates have begun to raise the profile of health consequences as a major impact of climate change. The World Health Organization has sought a greater voice in the U.N. response to climate change.⁶⁴ Director General Margaret Chan has pointed to climate change as a key priority for the global health community.⁶⁵ WHO declared 2008 the year of climate change and health⁶⁶ (as did the American Public Health Association⁶⁷). In 2008, the World Health Assembly also gave "an unusually high level of support"⁶⁸ to a resolution calling on the health sector to address climate change as a threat to global health.⁶⁹

Unfortunately, just as environmental governance authorities have not sufficiently taken health concerns into account, global health advocates have not sufficiently addressed the likely impact of climate change on the ability of virtually any global health initiative to meet its goals. Climate change is often cited as one

among many concerns that drive the need for improved global health governance. But the extent of the impact of climate change and widespread environmental degradation on our ability to meet global health goals and the ways in which attention to environmental concerns might dictate the focus of global health governance proposals have not been investigated in any depth. The agenda of WHO (and the myriad of other global health programs and initiatives) with respect to climate change must go beyond simply seeking a greater voice in environmental governance. Climate change must also be more fully integrated into the core functioning of these organizations and programs. On one hand, "there is an emerging understanding that the actions necessary to adapt to climate change are part of a basic preventive public health agenda, and need not be a distraction from the work required to address current health needs."⁷⁰ Because climate change acts primarily as an intensifier of existing health threats, investment in health adaptation to climate change is likely to enhance our ability to meet everyday health needs as well. On the other hand, this potential for synergy between climate adaptation and strengthening the core functions of public health should not lead us to believe that existing infrastructure is adequate or even suitable to meet the challenge of climate change. In coming decades, global climate change will intensify exactly those health threats that have not been adequately addressed by past approaches to international health cooperation, which have tended to emphasize security concerns or have been single-disease focused.

Recent focus on biosecurity concerns such as the trans-national spread of emerging infectious diseases and biological terrorism has further entrenched a security-based approach to global health law and policy that has origins in the earliest attempts at international health cooperation and is currently embodied in the International Health Regulations (2005).⁷¹ 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. It is certainly possible that environmental degradation could create favorable conditions for the emergence of the next SARS or influenza pandemic, but the far more likely impacts (such as water-borne and vector-borne disease and natural disasters) will be more confined within particular regions. Some commentators have cast climate change as a national security concern based on the possibility that competition for increasingly scarce resources will lead to mass migration and armed conflict.⁷² These impacts are likely to be seen much farther in the future than more imme-

diated impacts on health, however, and emphasizing these far-off possibilities may be to the detriment of efforts to spur the rapid upwelling of political will that is required to address climate change now.

Other global health initiatives have not relied as heavily on security concerns but have nonetheless failed to address upstream determinants of health or health systems strengthening at the level that will be required to rise to the challenges of climate change. The health impacts of climate change do not respect the traditional typologies of threats to health that have driven the organization of health agencies at every level.⁷³ Climate change will impact infectious disease control, chronic disease, nutrition, food safety, and response to natural disasters. These areas of study and intervention have not been well integrated within the health sector, making a coordinated health adaptation response to climate change difficult to organize at the local, national, or international level. The health sector is further complicated by the important role played by nongovernmental organizations and initiatives, most of which operate outside of national or international governance structures. Many of these programs are vertical health services programs focusing on specific initiatives and diseases rather than on strengthening comprehensive primary care.⁷⁴ Although some are beginning to see the importance of more general interventions to affect upstream determinants of the diseases they target, they are a long way from coordinating their actions with each other and with governmental programs to the extent that will be required to respond effectively to the threat of climate change.⁷⁵ New approaches are required to address the impacts on human health that we have already begun to see as a result of climate change.

The UNFCCC adaptation framework being developed by the climate community has the potential to be grounded in the needs of those whose health is most immediately threatened, rather than in the security concerns of others. The driving principle of the UNFCCC is "common but differentiated responsibility" for mitigating and adapting to anthropogenically forced climate change.⁷⁶ Built into its foundation is the concept that nations who enjoyed rapid industrialization at a time with very few constraints for the protection of the environment have a responsibility to the developing nations that are now being harmed as a result. This approach, which is at least nominally based on responsibility rather than security concerns, could be promising for moving global health initiatives forward. If the global health community can be integrated into the adaptation response sufficiently to make health adaptation a central priority, then moving some of the work of strengthening public health

infrastructure to a new governance venue may actually be beneficial.

Some have pointed to human rights as the most appropriate policy orientation for the response to climate change. Like the principle of “common but differentiated responsibility” that guides the UNFCCC, rights-based discourse provides a framework for discussing climate change adaptation as an issue of “burden sharing.”⁷⁷ Whereas the UNFCCC is primarily concerned with sharing obligations among the nations of the world, human rights brings the discussion to the level of individual (and to some extent collective) rights of people and the corresponding obligations of their governments. An approach to health adaptation

by the many nongovernmental organizations (which have become such important players in global health in recent decades) in international health governance under the World Health Assembly. Improved coordination of resources for protecting and promoting health will be crucial to our resilience to the impacts of climate change. Substantial resources for global health are now being channeled through nongovernmental programs and initiatives. Giving those programs a greater voice in, and accountability to, international health governance mechanisms could go a long way toward improving the coordination of those resources. Lawrence Gostin’s proposal for a new Framework Convention on Global Health (discussed in this volume by

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grounded in human rights — particularly the rights to health, food, water, shelter, and a healthy environment — would re-center the discussion on the victims of climate change, asking “*who*, precisely, is likely to suffer *what* and *why*?”⁷⁸ In doing so, it has the potential to push global health initiatives toward greater consideration of upstream determinants of health, particularly for the marginalized populations that are most vulnerable to the impacts of climate change. To the extent that climate change causes some people’s living conditions to fall below the acceptable minimum thresholds derived from human rights guarantees, it may be seen as unlawful and actionable.⁷⁹ Groups that are especially vulnerable to climate change are already beginning to look to human rights guarantees as a tool for forcing action on climate change mitigation and for demanding assistance with adaptation.⁸⁰

These broad recommendations for new orientations and approaches as global health governance seeks to better integrate climate change into its policy would of course need to be implemented through concrete programs. The specific proposals discussed in this issue — for the establishment of a Committee C of the World Health Assembly and for the creation of a new Framework Convention on Global Health — are highly relevant to the health adaptation response to climate change. The Committee C proposal discussed by Illona Kickbusch, Wolfgang Hein, and Gaudenz Silberschmidt⁸¹ aims to increase the participation

Scott Burris and Evan Anderson) aims to provide better protection for the world’s poorest and least healthy people.⁸² Although every region of the world will experience the impacts of climate change, a disproportionate burden will be shouldered by those in poor countries and by disadvantaged populations in wealthier countries. The greatest impact of water scarcity will be in Africa,⁸³ which already bears a significant portion of environmental health burden.⁸⁴ Developing countries there and across the globe already struggle with scarcity of clean water and nutritious food, as well as high rates of endemic and epidemic infectious disease. Climate change is likely to exacerbate these problems in most regions. Even aside from the geographic disadvantages of certain regions, climate change is likely to significantly widen health disparities between rich and poor worldwide as the availability of substantial resources for climate change adaptation becomes an increasingly important determinant of health.⁸⁵ If our aim is to ensure a minimum threshold of health for the world’s marginalized people, then environmental health interventions and climate change adaptation are excellent starting points.

V. Mitigation/Adaptation as a Framework for Thinking about Upstream Determinants

One of the defining characteristics of global health law is its intersectionality. Gostin and others have staked a claim on behalf of global health law to issues tradi-

tionally dealt with by other, distinct disciplines: international trade, human rights, national security, and environmental law.⁸⁶ Despite the clear importance of these issues to the achievement of global health objectives, the integration of health concerns into the legal frameworks and governance regimes of other, non-health, disciplines has been challenging. Where health advocates and policymakers have sought to take on the broader environmental, social, and economic facts that play such a crucial role as upstream determinants of health, they have encountered considerable controversy. The role of health law and policy with respect to these broad concerns is not entirely clear.⁸⁷ This is in part due to turf disputes between health law and policy and the legal regimes and governance frameworks of other disciplines more directly aimed at environmental, social, and economic concerns.

Global environmental law is moving beyond the relatively straightforward problems of localized pollution and contamination and is now seeking to address broader, more globalized forms of environmental degradation. As it has done so, it has arguably done more to address certain disease threats than international health law.⁸⁸ In the process of environmental law's evolution, new approaches to regulation, governance, and policymaking are emerging. Global health law has already benefited from one of these innovations — the framework convention approach to treaty-making was borrowed from international environmental law and applied to tobacco control.⁸⁹ This article argues that another, somewhat more nebulous innovation might also be a useful tool for thinking about global health governance with respect to environmental degradation, and possibly other upstream determinants of health.

Mitigation/adaptation is a useful way of thinking about integrating health and environmental concerns. With respect to mitigation, environmental law and governance is at the forefront. Global health can and should play a role in motivating and informing the response by working within environmental law frameworks and governance regimes. With respect to adaptation, there is an opportunity for global health to take on a leading role, motivated and informed by environmental concerns. Of course, this mutually beneficial arrangement is more potential than reality at this stage in the global response to climate change. Nonetheless, as global health advocates and policymakers attempt to establish a role for themselves in the climate change world, the mitigation/adaptation response framework they encounter there might provide a useful tool for thinking about global health's role with respect to other upstream determinants of health as well.

There are clear parallels between the mitigation/adaptation paradigm and the "palliative/responsive" distinction highlighted by Scott Burris and Evan Anderson in this volume.⁹⁰ Burris and Anderson are interested in the ways in which public health interventions "may (often effectively) moderate the impact of social determinants they do not alter, or they may take the form of 'structural interventions' aimed at changing determinants or their more distal mechanisms themselves."⁹¹ The mitigation/adaptation framework developing under the UNFCCC has created an important opportunity for bringing policymakers and advocates from other disciplines to the table. As this evolution plays out, it may provide an instructive example of how different types of public health interventions (whether styled as palliative/responsive or adaptation/mitigation) might lend themselves to different governance arrangements for integrating health concerns into the work of other disciplines.

Conclusion

The time is ripe for innovation in global health governance if we are to meet the challenges of climate change and other global, and seemingly inexorable, threats to health. In this article, I have argued for cross-pollination among disciplines of law and policy and among policy orientations and frameworks. If we have any hope of mitigating and adapting to climate change in a meaningful way, it is through better integration across the boundaries between environmental and health law and governance and among policy approaches grounded in economics, security, and human rights. The result may be an increased focus on upstream determinants of health and a strengthening of global health infrastructure that will simultaneously enhance our ability to meet routine needs and increase our resilience to the impacts of climate change. The global health community must demand a greater voice in negotiations on the mitigation response to climate change. We must also be prepared to lead the adaptation response with regard to health impacts and to support adaptation in other sectors by evaluating measures based on their implications for health. This will require new legal tools to promote an increased emphasis on basic public health infrastructure and environmental determinants of health, especially access to safe and potable water and sufficient nutrition, adequate sewage and sanitation, and safe and effective vector pest control. It will also require new governance mechanisms for coordination among governmental and nongovernmental actors at the national, international, and local levels. As the global response to climate change builds momentum, it may

serve as a proving ground for the integration of health concerns into the domains of other disciplines.

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