

## BOOK REVIEW

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Alice C. Hill, and Leonardo Martinez-Diaz, *Building A Resilient Tomorrow: How to Prepare for the Coming Climate Disruption*. New York: Oxford University Press, 2020. pp. 250. ISBN: 978-0-19-090934-5.

At this writing, a pandemic continues to slam into countries with the speed and lethal impact of a natural disaster. Unlike most disasters, this crisis strikes the entire world at once. Global climate change, though less immediate, shares some similarities with the COVID-19 contagion. Climate change is also a global health, humanitarian, and economic crisis that contributes to the death, illness, and poverty of those most vulnerable to extreme heat, vector-borne disease, floods, drought, cyclonic winds, invasive pests, and other climate-related risks. Both the climate challenge and this pandemic underscore our common vulnerability. Moreover, *neither* are *Black Swan* events. Scientists have warned us for years about both. We are reminded again of our habitual discounting of both the lessons of the past and the science-based scenarios of the future.

*Building A Resilient Tomorrow: How to Prepare for the Coming Climate Disruption* examines major challenges presented by global climate change and the corresponding need to build *climate resilience* in the face of these risks. Climate resilience is a continual process of identifying, avoiding, managing, and withstanding the many risks posed by climate change. The subject of resilience is growing in importance as our current greenhouse gas emissions trajectory continues to far exceed the pathway needed to avoid destabilizing increases in temperature. Even with rapid and dramatic reductions in emissions, we are likely locked into many decades of escalating climate risk and extreme weather.

Alice Hill is a senior fellow for climate policy at the Council on Foreign Relations. She was previously a special assistant to President Obama and director at the National Security Council for policy on climate resilience policy and catastrophic risks, including biological threats. In 2009 Hill led planning at the U.S. Department of Homeland Security on climate adaptation, and catastrophic biological and chemical threats, including pandemics. Earlier in her career, she led white-collar crime prosecution in the Los Angeles U.S. Attorney's office. Leonardo Martinez-Diaz is the Global Director, Sustainable Finance Center of the World Resources Institute, where he leads engagement on sustainable finance. Previously, he was with the U.S. Department of the Treasury as Deputy Assistant Secretary for Energy

and Environment, responsible for overseeing multilateral climate and environmental funds, work on climate finance, and leading on climate change elements of international negotiations.

This book covers expansive territory in 10 brief chapters, exploring such diverse issues as how and where to build in an age of changing climate, the legal and market implications of climate risks, climate change and national security, climate risks and inequality, and decisions on relocating people and settlements among other topics. A chapter on the importance of maintaining free, openly sourced climate and weather data in the United States and the development of climate analytics is highly relevant for the assessment of climate impacts on human health. This data is also critical for evaluating the value at risk of many types of assets and property in the face of climate hazards.

The authors succeed in shedding light on a complex subject while avoiding the narrative quicksand of technical jargon. Their use of clear and timely examples of climate risks and related opportunities for resilience building will be of interest to both the specialist and general reader. Although the book acknowledges the critical nexus between science and policy, it steers clear of deep digressions on both. At the same time, the authors sidestep the temptation to render apocalyptic pronouncements that afflict many publications with “climate” in the title. As compared with most other books on climate resilience, this volume offers the reader an accessible and thought-provoking survey of this complex and wide-ranging challenge.

In the chapter entitled “Harden the Healthcare System, and Make it Smarter,” the authors underscore the health challenges posed by climate change. For example, extreme heat is currently the greatest climate-driven health threat, killing more people than any other natural hazard. In one instance in 2010, a heatwave in the Indian city of Ahmedabad reached 116°F (47°C), causing 1,300 deaths. Vector-borne diseases are increasing and expanding their ranges as temperatures rise, mosquitoes migrate and carry the Zika virus, Dengue, West Nile, and Chikungunya, while other vector-borne diseases are spread through ticks and fleas.

Climate change threatens water security, access to clean water and increases exposure to water-borne diseases, including those spread through bacteria and toxins produced by algae. Cholera, still a significant public health threat in poor countries, is exacerbated by flooding that spreads the bacteria. Climate change also threatens food security, given that increasing heat, drought, flooding, and invasive pests lower crop yields and weaken entire food chains from production, storage, transport, processing to consumption. The authors note that rising temperatures are also linked to deteriorating mental health, evidenced in part by increased psychiatric admissions and suicides during periods of extreme temperature. Climate-related disasters take an emotional toll, about half of the Americans who endured Hurricane Katrina developed some type of anxiety or mood disorder.

Hill and Martinez-Diaz assert that overlooking the impact of climate hazards on health-care infrastructure places lives at risk. For instance, the loss of power without adequate backup generators can kill patients. In a Florida nursing home after Hurricane Irma, the loss of power knocked out air conditioning, causing inside temperatures to rise as high as 100°F (38°C). Compounded by a delayed

evacuation, the heat caused the death of 12 people. After Irma, the U.S. Congress mandated training for local governments and utilities in order to prepare for increasing power losses in medical facilities and nursing homes resulting from extreme weather. The authors cite resilience measures put in place by the vast Texas Medical Center in Houston after Tropical Storm Allison, installing watertight flood doors, widened drainage culverts, elevated electrical and pump systems, a flood alert system, and increased training among other measures (pp. 140–141).

This book came to press just before the global COVID-19 outbreak. However, passages on climate-related health risks bear a striking resemblance to much of the current discourse on pandemics and are prescient: “Once an oncoming health threat is identified, public health practitioners should have the capacity to mobilize resources to address it, including providing the public with the information it needs to take precautions” (p. 142). On the need for early detection, the authors observe that: “Early-warning systems that communicate information about an impending [climate-related] disease outbreak can also save lives by giving both government authorities and the public time to take preventive action. Some researchers even dream about the creation of a global early-warning system for *infectious disease*” (p. 143, italics added).

Hill and Martinez-Diaz conclude their chapter on health by advocating greater disease surveillance, predictive capabilities, early-warning systems, and the use of climate vulnerability assessments by medical facilities. They further recommend investing in resilience retrofits and upgrades and urge that medical, nursing and public health education incorporate climate change into core curricula. Finally, they see value-added in a collaboration between federal and private partners to create a cadre of “climate-science translators” who will help state and local governments to evaluate climate risks and devise effective resilience strategies (pp. 210–211). The concluding chapter notes the glaring retrograde movement of the current U.S. administration with respect to long-accepted tenets of climate science and pragmatic policy, but do not dwell on this, preferring to position their recommendations for public action as forward-looking at present, but absolutely necessary.

In Chapter 3, “Making Markets Work for Resilience,” the authors provide a concise overview of the current movement toward greater climate risk disclosure and its market implications, the impact of climate risk on the bond market, municipal credit ratings, and developments in the insurance industry among other trends. This chapter effectively conveys the mounting pressure on market actors to disclose climate risks and the potential costs of inaction on resilience. This reviewer’s experience with companies that sell technologies, services, and products to help buyers better manage their climate risks suggests that the “smart money” in business is already embarking on multitudinous actions to build resilience. This resilience-building is not driven by policy, but by the recognition that climate risks threaten current and future private properties and assets, operational continuity, supply chains, and other business considerations.

Furthermore, private actors rarely use climate jargon to describe resilience building, unlike the “green” actions taken to reduce or “mitigate” the emissions of greenhouse gases. Instead, they use the language of business to report activities related to resilience: finance, risk management, product development, etc. Con-

sequently, most private work on resilience does not get counted as formal “climate resilience” by policymakers. Even so, as climate risks worsen, the demand for all kinds of solutions will only increase. Resilience is a big business now and one destined to grow larger—but a business that still remains hidden in plain sight.

In many sectors, entrepreneurs, nimble companies, and investors recognize the business potential in rising heat, drought, flooding, vector born disease, sea-level rise, cyclonic winds, and other threats. This includes health care, where new vaccines, pharmaceuticals, preventive measures, protocols, and products to protect against vector-borne diseases delivered by mosquitoes and other pests will be needed, as will several measures against extreme heat and more resilient health-care facilities among other solutions.

Finally, the authors give short shrift to the Paris Agreement on climate change (pp. 90–91). The volume was written during the latter days of the Trump administration, which had pulled out of the agreement. But given the high-level attention paid to Paris outside of the United States their views on this agreement would be interesting. Perhaps the authors do not think that Paris plays a significant role in climate resilience, or they believe it is flawed, we do not know. But their view on what impact, if any, Paris might have on resilience would be an interesting addition to the discussion.

In summary, the authors have succeeded in providing an excellent overview of major developments in the growing field of climate resilience. They have done so in a manner that is accessible to a wide spectrum of readers—no easy feat. They make a convincing case that climate resilience is a growth area, and one of increasing importance to medicine and public health.

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