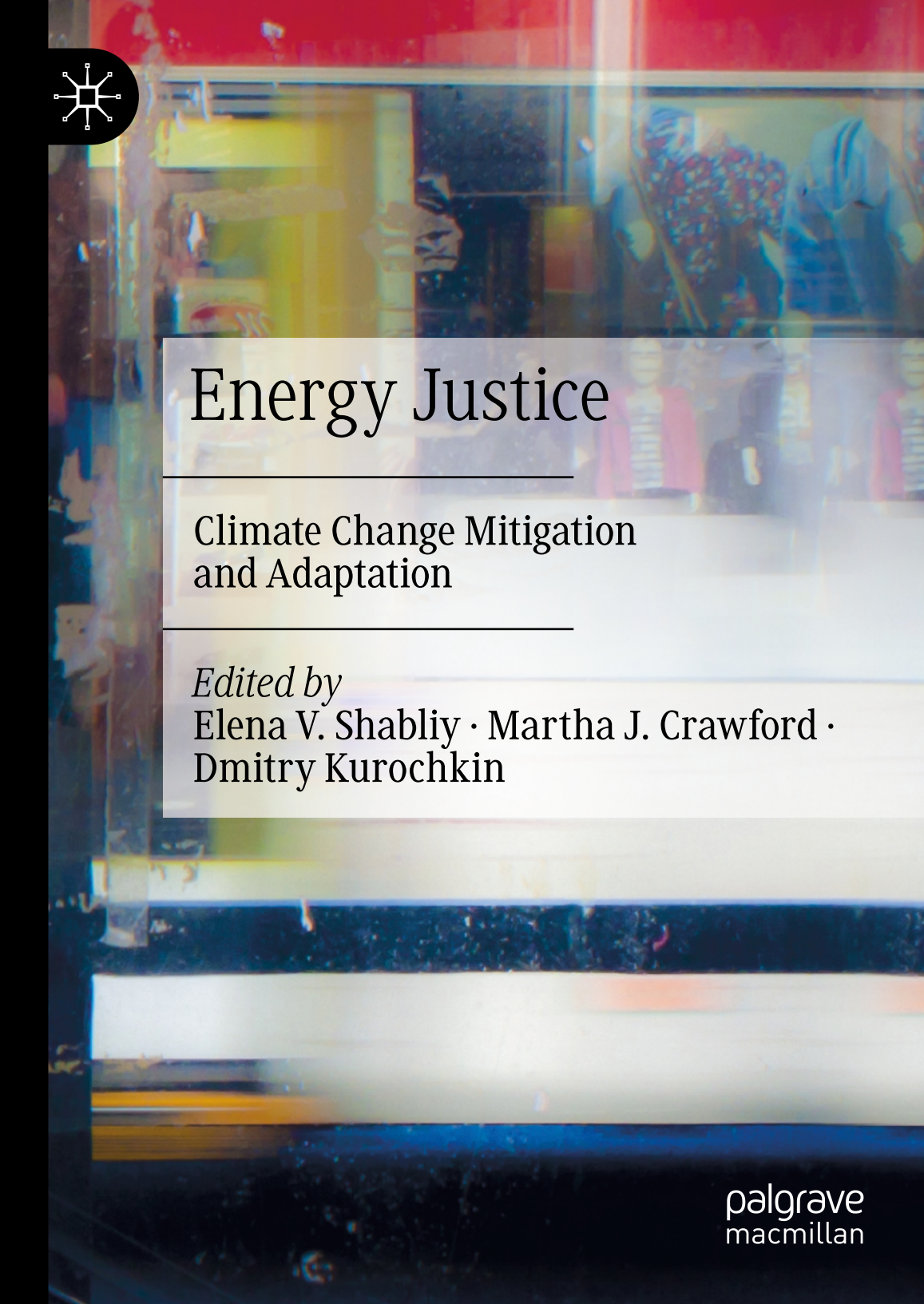

Energy Justice

Climate Change Mitigation and Adaptation

Edited by
Elena V. Shabliy · Martha J. Crawford · Dmitry Kurochkin

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Foreword

I write this on the Ides of March (March 15), 2020, as the novel coronavirus is sweeping the world. Many thousands have already died, in some countries hundreds in one day, and while the virus seems to have peaked and receded in Wuhan, China, and the rest of that nation, it is making swift inroads across its new epicenter, Europe, and in North America as well. It is only a matter of time before the entire globe is caught in this conflagration of disease. There has been nothing like it since the flu pandemic of 1918–1919, more than a century ago.

Why start this way in a book about energy justice, climate, and sustainability? The reaction of people and their governments is deeply instructive. Where decisive action has been taken early on, where testing for the disease is readily available and practiced, where social distancing is the norm, and where people follow all precautions, then the spread of the virus is slowed, its curve "flattened," and the number of deaths reduced. Where governments have hesitated at the beginning of the crisis—and almost every government has done so—where preparedness for an epidemic, despite warnings, has been delayed for decades, where citizens carelessly or stubbornly do not heed directives to stay home or to minimize gathering in groups, and where younger people fail to recognize how they themselves, mildly affected, can carry a mortal contagion to older citizens and to those with underlying medical conditions, there the ravages of Covid-19 are greatest, the health care system and hospitals overwhelmed. Doctors and nurses themselves succumb to the illness,

many dying near their patients. In this crisis, barely a few months old, it has been hard enough to get many people, including those in authority, to think with informed imagination into the future even a month or two, let alone a year or more. Something in the human psyche resists changing habits, thinking of a rainy day, or even recognizing one when it comes.

It is a grim reminder of what the failure to accelerate a great energy transition, as well as climate mitigation and adaptation, will eventually cause. The harmful effects of unsustainable practices, of the continued burning of fossil fuels, of poor habits of denial and waste, will come more slowly, and on the whole these effects will appear far less dramatically noticeable than the ravages of a pandemic. However, holding on to non-renewable energy and continuing to pursue unsustainable farming, logging, and consuming, will result in a future that, unlike that of even a global pandemic, cannot be eventually reversed. Climate disruption will reach irreversible tipping points. A rainforest or great boreal forest, once decimated, cannot recover. Thawing permafrost cannot be refrozen. An epidemic rarely spares the rich, but in an unsustainable world the poor will always remain most vulnerable. Humanity and the life on which humanity depends, the glorious biodiversity of this rare planet, will see an erosion that will impoverish us in an insidious and, for a time, an imperceptible way. Because of the shifting baseline syndrome—in which we constantly alter our view of what is normal to accommodate whatever the current, prevailing conditions are—we shall find ourselves not on a slippery slope but already falling down it without a handhold.

The major question then is, will governments, businesses, and citizens themselves recognize the need for renewable energy and sustainable practices in time to prevent the pernicious and cascading effects of the way that almost all of us—especially those in the developed world—have been living? The Papal Encyclical of 2015 asks this question. Whether one is religious or not is not the point. (The laws of the natural world are no respecters of religion, or of financial deals; nature doesn't do derivatives.) The same question is asked by Robert Jay Lifton, who helped to found International Physicians for the Prevention of Nuclear War. He has written that issues of sustainability, and especially the foundational one of climate disruption, ask us to change the way that we live, not just in our consumption of energy, food, land, trees, and water, but in the very self-consciousness of ourselves as the species that has, for at least a generation, dominated every ecosystem on Earth, and will continue to do so. This entails nothing less than a re-establishment of basic values. The planet

is now our garden, and gardeners must not only learn how to tend the soil and plants under their care, they must watch their own habits, adjust their own work, and regard with responsibility, and even self-sacrifice, the others who rely on the garden, not only the living, but those who will come after. If our descendants inherit a chaotic, impoverished, and unjust world, future generations will ask, Why? And then they will remark, it did not need to be this way.

Indeed, it does not need to be that way. Human beings, individually, in small groups, in cities or as nations, are capable of applying education, knowledge, and technology to shift energy sources and use without turning their backs on growth itself. It has been at times a curse, but it is also an enormous blessing that we are such an adaptable species, for, even if William James declares that "habit is ten times nature," we can change habits. As a species we have done it. The rule of law, the dignity of each person, the intergenerational creation of lasting institutions that benefit the future: these were not part of human experience for the vast majority of our existence. To take more specific examples, in many places, people have stopped smoking. Farmers learned, after the harsh lesson of the Dust Bowl, to plow and plant in different ways. More and more young people are now turning away from meat with snouts and noses and turning to meat with beaks or bills, or no meat at all. For transportation, the internal combustion engine is on the way out, deservedly so, since it is far less efficient than electric motors. Sun and wind have enormous potential now being tapped at costs often below those of fossil fuels, and at costs that continue to fall, too. New types of agriculture and irrigation are producing more. World population will, with increased education of women, continue its leveling off. The message of this book is not one of gloom but of hope. It is not just academics and theorists (though they are important) who see the need for energy sustainability and paths to achieve it; it is often people in business, engineers, and those who manufacture goods, harvest crops, or build buildings. There is a rediscovery of the spirit that has governed many indigenous peoples: treat nature with respect, and that respect will be accorded back in dividends and continued bounty, not just today but for many generations.

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James Engell has taught at Harvard since 1978, chairing the Department of English from 2004 to 2010. He earlier chaired the Degree Program in History & Literature as well as the Department of Comparative Literature and also serves on the Committee on the Study of Religion. A faculty associate of the Harvard University Center for the Environment and Fellow of the American Academy of Arts and Sciences, he has taught environmental courses at Harvard, the National Humanities Center, and Waseda University. He has helped lead the divestment movement at Harvard. In 2008, Yale University Press published *Environment: An Interdisciplinary Anthology*, which he conceived and co-edited. His other books include *The Creative Imagination: Enlightenment to Romanticism* (1981); *The Committed Word: Literature and Public Values* (1999); with Anthony Dangerfield, *Saving Higher Education in the Age of Money* (2005), which won the 2007 Association of American Colleges & Universities Ness Book Award for best book on liberal education; and with Michael D. Raymond, with illustrations and text newly edited from the manuscripts, a critical edition of William Wordsworth's great autobiographical poem of consciousness, politics, and the natural world, *The Prelude* (2016).

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Editors and Contributors

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Paul-Francois Tremlett's *Towards a New Theory of Religion and Social Change*, Bloomsbury (2020), "A Haunted Abbey and A Concrete Palace" in *The Inclusive Museum*, Common Ground Publisher (2019), "The Spectral Image: The History of Visualising Radiation," in *International Journal of the Image*, Common Ground Publisher (2018), and "Towards a Theory of Cavernous Porosity" in *Architecture and Culture*, Routledge, and Taylor & Francis (2016).

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CHAPTER 1

Energy and Environmental Justice

Elena V. Shabliy and Dmitry Kurochkin

> That the Earth now desperately needs defense from impending environmental catastrophe is surely obvious to any rational and literate person. The different reactions to the crisis are a most remarkable feature of current history.
>
> —Noam Chomsky Who Owns the Earth?

Introduction

The question of energy justice has become one of the key issues of the United Nations agenda; a recent report from the UN Intergovernmental Panel on Climate Change (IPCC) emphasizes the adverse effects of human-induced climate change and an urgent need for greenhouse

[1] "The Intergovernmental Panel on Climate Change," https://www.ipcc.ch/about/ (last accessed 10 October, 2020).

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gas emissions (GHGs) reduction worldwide.[1] More than 270 experts coming from 65 countries currently put together a second draft of the Sixth Assessment Report (AR 6); it explains the scientific understanding of the climate system and climate change, bringing together the recent advances in climate science. The international environmental meeting was planned to be held in Ecuador; however, it was decided to proceed in an online format—due to the Covid-19 pandemic impact. It was commonly acknowledged that the climate change problem would cause multi-level problems.[2] By 2021, 191 country Parties joined the Paris Agreement.[3] Developed country Parties are committed to the reduction of GHGs as well as developing economies focus their efforts on the advancement of climate change mitigation and adaptation strategies. The current global pandemic problem also proves most nations are unprepared for global climate- and health-related crises.

Energy consumption is one of the main contributors to global GHGs, as Chapter 2 of this book emphasizes, responsible for around 25% of global emissions (Zillman, 2018). Energy justice is closely related to other environmental matters, such as energy security, energy innovation, sustainability, affordability, etc. Recent technological and legal advancements have altered the global energy legal framework and general energy development. Moreover, to facilitate future energy innovation and 100% renewable energy transition, the UN determined the necessity of promotion equity, energy justice, and energy innovation. Energy justice touches upon such important questions as just distribution of fossil fuels worldwide. The sustainable revolution of the energy sector requires investments in clean energy technology and innovations. The International Energy Agency (IEA) points out that energy technology innovations can introduce more benefits and facilitate transformation, but policy advancement is needed.[4]

[2] "Worst Case for Climate Change Doesn't Look Realistic," Bloomberg, https://www.bloomberg.com/opinion/articles/2019-12-23/worst-case-for-climate-change-doesn-t-look-realistic, by Noah Smith, December 23, 2019 (last accessed October 15, 2020).

[3] "Paris Agreement—Status of Ratification," https://unfccc.int/process/the-paris-agreement/status-of-ratification (last accessed October 15, 2020).

[4] "Energy Technology Perspectives," https://www.iea.org/reports/energy-technology-perspectives-2017 (last accessed October 15, 2020).

Energy justice lies not only in an academic realm, it is also a pathway for energy decision-makers at various levels—from energy firms to regulators, policymakers, and other stakeholders; it undoubtedly fuels energy law framework development.[5] There is an exigency for comparative approaches to the energy justice framework. This book offers a stimulating analysis of the most recent energy justice and climate change mitigation and adaptation discourses, also considering the available comprehensive policy development from the international perspective. The European Union, for example, has always been operative in the field of environment, with a proactive and effective approach, cutting-edge legislation, and solutions.[6]

In accordance with the EU strategies, the European road map aims at an 80% reduction in GHGs compared to 1990 levels by 2050 and the transition to an overall low-carbon economy.[7] This effort requires the participation of all member states; the 2030 framework for climate change is a requisite for the cooperation of country members, and there might be obstacles related to the Covid-19 crisis. In the recent past, the member states have increased the share of fuels coming from the renewable energy sector.[8] The Covid-19 crisis will exert an influence on the energy sector and future investment trends; recovering from the Covid-19 crisis may impact sectors in different ways, for example, low prices and low demand in all subsectors will leave energy companies with weakened financial outcomes.[9] Renewable electricity projects are expected to be in the best financial position, at the same time private firms that are exposed to market prices may experience the most severe financial impacts.[10]

[5] Iñigo del Guayo, Lee Godden, Donald D. Zillman, Milton Fernando Montoya & José Juan González, *Energy Justice and Energy Law* (Oxford: Oxford University Press, 2020), pp. 16–17.

[6] Simona Bigerna et al., *The Sustainability of Renewable Energy in Europe*, p. 10.

[7] Ibid., p. 3.

[8] Ibid., p. 9.

[9] "Global Energy Review 2020: The Impact of the Covid-19 Crisis on Global Energy Demand and CO_2 Emissions," The IEA 2020. https://webstore.iea.org/download/direct/2995, p. 42 (last accessed August 8, 2021).

[10] Ibid.

The Paris Agreement Agenda: Climate Change Mitigation and Adaptation

Thousands of experts representing the global community participated in the UN Intragovernmental Panel on Climate Change (IPCC); the Paris Agreement is one of the top-level events for climate policymakers and advancing efforts on climate change mitigation and adaptation. The worldwide target related to climate change mitigation is keeping temperature rise within 2 °C; this cap on global warming was determined in the Copenhagen Conference on climate change in 2009 and supported by the Kyoto Protocol in 2012. Currently, there are 192 country parties to the Kyoto Protocol participating in meaningful climate change dialogue.[11] The UNFCCC and Kyoto protocol require party members to report on climate change mitigation and adaptation strategies and national climate-related policies.[12] In 2016, the US and China joined the Paris Agreement; however, the US officially withdrew from the Accord in 2017 rejoining again in 2021.[13] The US aims at reducing Methane Emissions in the Oil and Gas Sector: "Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources Reconsideration," 85 Fed. Reg. 57,398 (September 15, 2020), by September 2021.[14] The US is expected to meet the Paris Agreement objectives that are climate-related initiatives having the following agenda:

- Holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and limiting the temperature increase to 1.5 °C above pre-industrial levels, acknowledging that it would significantly reduce the risks of climate change.

[11] "What Is the Kyoto Protocol?" https://unfccc.int/kyoto_protocol (last accessed November 2, 2020).

[12] Simona Bigerna et al. *The Sustainability of Renewable Energy in Europe* (Cham: Springer International Publishing: Imprint: Springer, 2015), p. 27.

[13] "Paris Climate Deal: US and China Formally Join Pact," BBC News. https://www.bbc.com/news/world-asia-china-37265541 (last accessed October 15, 2020).

[14] "Executive Order on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis," https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-protecting-public-health-and-environment-and-restoring-science-to-tackle-climate-crisis/ (last accessed August 4, 2021).

- Increasing the ability to adapt to the irreversible impacts of climate change and foster climate adaptation and mitigation strategies and low GHGs development, in a manner that does not impede food production.
- Making investment consistent with a pathway towards low GHGs and climate-resilient development.[15]

Comprehensive global climate and energy policies facilitate tackling human-induced climate change. There is strong evidence that climate change is a real threat, and human activity is the main cause of this urgent problem; fossil fuel consumption continues to rise, as well as global energy demand.

The Covid-19 Crisis and Global Energy and Health Systems

The Covid-19 crisis challenged and changed the global *status quo* having an immediate impact on health, wellbeing, energy use, and CO_2 emissions.[16] According to the International Energy Agency (IEA), there is an extraordinary uncertainty surrounding public health and the energy sector and global CO_2 emissions are expected to decline by 8%—this decline is set to be almost twice as large as all previous decreases since the end of World War II combined.[17] This unprecedented decline in emissions, however, may be temporary without significant changes.[18] Those countries that experience lockdowns have an approximately 25% decline in energy demand per week.[19] Overall, global energy demand dropped by 3.8% in the first quarter (Q1) of 2020.[20] Whereas global coal, oil, and gas demand decreased, the impact on the latter was moderate,

[15] "Paris Agreement," https://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf (last accessed October 15, 2020).

[16] "Global Energy Review 2020: The Impact of the Covid-19 Crisis on Global Energy Demand and CO_2 Emissions," The IEA 2020. https://www.iea.org/reports/global-energy-review-2020 (last accessed August 5, 2020).

[17] Ibid., p. 16.

[18] Ibid., p. 44.

[19] Ibid.

[20] Ibid.

renewable energy was the only source that posted a steady growth in demand, "driven by larger installed capacity and priority dispatch."[21] The IEA points out that full-energy demand is estimated to decline by around 6%, "equivalent to the combined energy demand of France, Germany, Italy and the United Kingdom in 2019."[22] The IEA predicts that the impact of the Covid-19 crisis on global energy demand in 2020 would be more than seven times greater than the 2008 financial crisis; renewables demand, on the contrary, is expected to increase due to low operating costs as well as preferential access to many power systems.[23] There are predictions that unemployment could rise 21%—higher than the ratio recorded during the Great Depression of the 1930s.[24] As the IEA assesses, renewables are the only energy source likely to experience demand growth across the remainder of 2020, regardless of the length of lockdown or strength of the future recovery. In Q1 2020, global electricity demand decreased by 2.5%, and the electricity supply underwent a shift toward low-carbon energy sources.[25] Nuclear power generation, for example, decreased by 3%.[26] The IEA estimates that the total global use of renewable energy will rise by about 1%.[27]

The Covid crisis temporarily impacted the GHGs level that may reduce the global temperature rise. However, this situation is expected to be short-term and there will be a need to keep the temperature below 2 °C, following one of the main Paris Agreement objectives, as GHGs have a direct impact on the global public health outcomes. According to Aaron Bernstein, there is no direct evidence that climate change is influencing the spread of Covid-19, "but we know that climate change alters how we relate to other species on Earth and that matters to our health and our risk for infections."[28] Less consumption of animal meat and more sustainable eating habits could decrease emerging risks of diseases as well

[21] Ibid.

[22] Ibid.

[23] Ibid.

[24] Ibid.

[25] Ibid., p. 22.

[26] Ibid., p. 25.

[27] Ibid., p. 35.

[28] "Coronavirus, Climate Change, and the Environment A Conversation on COVID-19" with Dr. Aaron Bernstein, Director of Harvard Chan C-CHANGE, https://www.hsph.harvard.edu/c-change/subtopics/coronavirus-and-climate-change/ (last accessed November 2, 2020).