Preface

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In August 1945, with the dropping of the atomic bombs on Hiroshima and Nagasaki, the world entered a new geologic epoch, the Anthropocene. This is the first time in all of history in which human beings have become the dominant force on Earth, the shapers of the planet's environment.[1]

The environment is essential to all life on Earth, and the health of the planetary environment profoundly influences the state of human health. Human species have inhabited the earth for hundreds of thousands of years, but it is only in the past eleven thousand years, the time since the last ice age—the Holocene Epoch—that civilizations have risen, because it is only in this period that an environment favorable to human thriving has been sustained over a span of many centuries.

In the Holocene, the climate has been relatively stable, and the environment has provided clean air with sufficient oxygen, fresh water, healthy soils, and abundant food. In this epoch, humans have been able for the first time to build cities, accumulate great wealth, generate new knowledge, explore the farthest corners of the planet, write books, elucidate the mysteries of the human body, visit the bottom of the oceans, and venture into space.

These advances have greatly benefited human health and well-being, and they have led to doubling of the human life span and the conquest of many dread diseases. They have come, however, at great cost to the planet, and they have produced great inequality. They have relied on the combustion of vast quantities of fossil fuels, massive consumption of

[1] See Sarah Whitmee, Andy Haines, Chris Beyrer, Frederick Boltz, Anthony G. Capon, Braulio Ferreira de Souza Dias, et al., "Safeguarding Human Health in the Anthropocene Epoch: Report of the Rockefeller Foundation-Lancet Commission on Planetary Health," *Lancet* 386, no. 10007 (2015): 1973–2028.

minerals, widespread deforestation, progressively heavier applications of insecticides and herbicides, and the production and release into the environment of enormous quantities of chemicals and plastics.[2] In short, they have strip-mined the Earth's resources and mortgaged humanity's future.

The consequences are climate change, pollution, and biodiversity loss—the 'Triple Planetary Crisis.' These threats are responsible for more than nine million premature deaths each year as well as widespread disease and disability.[3] They can be directly attributed to the currently prevalent, linear, take-make-use-dispose economic paradigm—termed by Pope Francis "the throwaway culture"[4]—in which natural resources and human capital are viewed as abundant and expendable, and the consequences of their reckless exploitation are given little heed. This paradigm focuses almost exclusively on short-term economic gain, as measured by the Gross Domestic Product (GDP), while ignoring natural capital and human capital.[5] Hence, it fails to link economic development to social justice, and it is ultimately unsustainable.

Technical and legal solutions to the planetary crises of the Anthropocene are necessary and frequently effective, as seen in the sharp declines in manufacture of chlorofluorocarbons that resulted from the

[2] See Philip J. Landrigan, Richard Fuller, Nereus J. R. Acosta, Olusoji Adeyi, Robert Arnold, Niladri Nil Basu, et al., "The *Lancet* Commission on Pollution and Health," *Lancet* 391, no. 10119 (2018): 462–512.

[3] See Landrigan, et al., "The *Lancet* Commission on Pollution and Health."

[4] Francis, *Laudato Si': On Care for Our Common Home* (2015), www.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html, nos. 16, 22, 43.

[5] See Partha Dasgupta, Shunsuke Managi, and Pushpam Kumar, "The Inclusive Wealth Index and Sustainable Development Goals," *Sustainability Science* 17, no. 3 (2022): 899–903.

Montreal Protocol,[6] reductions in air pollution following the passage of clean air laws,[7] and recent large decreases in the costs of renewable energy.[8]

All these solutions have, however, been reactive. None offer protection against hazards yet to come. Durable protection against current and future dangers will require solutions that extend beyond specific threats and technical fixes. Such solutions must address the underlying political, economic, ethical, and moral causes of the planetary crisis.[9]

It was in this spirit that Boston College convened an international Conference, "Joining Science and Theology to End Plastic Pollution, Protect Health, and Advance Social Justice," on October 4–5, 2024. This conference combined a state-of-the-art review of current knowledge of plastics' harms to human health and the global environment[10] with an exploration of the social consequences and the ethical foundations of the plastics crisis. The goal was to bring moral clarity to the conversation on plastics. The conference brought together scientists, ethicists, lawyers, economists, engineers, policy makers, and religious leaders. It was based on the recognition that the plastics crisis is more than an environmental threat, and that like climate change, air pollution, biodiversity loss, and escalating inequality, it is also a social and ethical challenge. It is a crisis that demands solutions that are based on the best science, but that are also just and ethically sound. This volume gathers the papers presented at the conference.

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[6] See United Nations Environment Programme (UNEP), "The Montreal Protocol on Substances That Deplete the Ozone Layer" (1989), ozone.unep.org/treaties/montreal-protocol-substances-deplete-ozone-layer/text.

[7] See Landrigan, Fuller, Acosta, et al., "The *Lancet* Commission on Pollution and Health."

[8] See Max Roser, "Why Did Renewables Become So Cheap So Fast?" (2020), ourworld indata.org/cheap-renewables-growth.

[9] See Francis, *Laudato Si'*, no. 139.

[10] See Philip J. Landrigan, Hervé Raps, Maureen Cropper, Caroline Bald, Manuel Brunner, Elvia Maya Canonizado, et al., "The Minderoo-Monaco Commission on Plastics and Human Health," *Annals of Global Health* 89, no. 1 (2023): doi.org/10.5334/aogh.4056.

Overview

To articulate a critical analysis and propose solutions, the volume frames the needed issues, assesses the challenges, responds ethically to both issues and challenges, and strives for feasible solutions. Religious commitments and political engagements further enrich the book's contributions and aim at motivating sustainable actions. The Declaration that ended the 2024 conference, entitled "Our Shared Responsibility to End Plastic Pollution, Protect Health, and Advance Social Justice for All," exemplifies this interdisciplinary approach and aims at gathering diverse moral agents who are concerned about plastic pollution and its effects on humankind and the Earth, and who long to see resolute international actions, including a global treaty on plastic production and disposal.

In the opening chapter, Judith Enck provides a broad overview of the ways that plastics increasingly affect the planet and human health. She also critically examines the failures of recycling. She urges faith communities and civil society to commit, acknowledging the gravity of plastic pollution and responding to it with urgent actions (e.g., policies and regulations), unmasking false solutions.

In Chapter Two, Sarah Dunlop, Yannick Mulders, Louise Goodes, Hervé Raps, and Philip J. Landrigan richly document the scientific and technical aspects of plastics production, recycling, and disposal, making clear the ways in which this topic is complex and ethically problematic. They stress how some types and uses of plastics are both useful and necessary (e.g., in healthcare practice), but, at the same time, plastics production, consumption, and disposal pose growing threats to human and planetary health. In compelling ways, these authors demand an ethically-grounded treaty with concrete provisions—like a global cap on plastic production and a strict regulation of plastic chemicals—that will prioritize the protection of human health, human rights, and planetary health.

In their respective chapters, Adetoun Mustapha Olaitan and Pushpam Kumar assess the ongoing challenges. First, Mustapha Olaitan highlights

the disproportionate negative impacts of plastics on low- and middle-income countries, mostly in the Global South. Existing inequities that depend on the Global North and Global South divide have dire implications for women and vulnerable populations. While striving to hold plastic producers accountable, it is necessary to support community-led initiatives and education. Successful strategies must address the diverse and context-specific technological, social, political, ecological, and economic challenges that people and their communities face across the planet.

Second, Pushpam Kumar stresses how the harms caused by plastics result in increased mortality and morbidity, which in turn undermine human capital and compromise sustainable growth. However, the exclusive use of Gross Domestic Product (GDP) as a metric of national wealth fails to measure these damages. The use of the Inclusive Wealth Index to supplement the GDP could provide a more comprehensive assessment of economy-environment interactions and better assess inequities than the GDP alone and a better guide to implement ethically-grounded, health-protective, and economically-sound remedies to the global plastics crisis.

Three authors articulate ethical responses. Willis Jenkins discusses how, in early Christian thought, the word 'plastic' pointed to the human ability of being molded by divine action. Then plastic became emblematic of the human capability to pollute and of colonial powers to dominate human beings and the Earth. Jenkins argues that we should retrieve the original meaning and assume our responsibility, caring for our planet. In engaging the Minderoo-Monaco Report, he highlights six approaches that could turn plastics and their impacts into ethical problems that could be tackled: trash containment, bodily contamination, violence and injury, distributive injustice, multispecies injustice, colonial injustice, and integrative repair. The chapter ends by commenting on five tactics which could guide our actions: cap production, inclusive science, extended producer responsibility, rights of rivers and oceans, and living a good life with plastic.

Christina McRorie stresses how disproportionate harms affect the most vulnerable and call for drastic changes to our current trajectory of producing, using, and disposing of plastics. When considering these global economic factors, it is tempting to conclude that until governments step in to stop markets, we are effectively powerless. While granting the necessity of coordinated political action, McRorie proposes that economics and Catholic social thought offer resources for taking a less fatalistic approach, and viewing the economy—and thus the plastics crisis—in more three-dimensional terms. Hence, she sketches a view highlighting the deeply social nature of all economic activity and how market processes and outcomes are sustained and shaped by cultural norms and practices undertaken at all levels of society. Such a perspective broadens our sense of who participates in economic governance and of what forms of action can be taken to steer global and local economies away from our mindlessly increasing reliance on plastics, implementing the preferential option for the poor.

Andrea Vicini argues that the virtue of social trust is necessary to address the plastic pollution crisis. Moreover, other virtues—e.g., prudence, justice, and solidarity—contribute to strengthen personal and social agency and inform concrete practices. Furthermore, civil society should not presume that technology is *the* only solution to address the gravity of the global environmental crisis. Following Pope Francis's invitation to examine any "technocratic paradigm," both a critical assessment of technological developments and a strengthened social awareness may lead to promoting environmentally sustainable alternatives and embracing forms of resistance to unquestioned uses of plastic products. Finally, education and formation empower moral agents and lead to needed structural transformations and changes.

Striving for solutions, Margaret Spring and Cindy Matuch discuss the current status of an international legally-binding instrument to address plastic pollution. Their historical account considers critical areas that have been discussed among UN members and have shaped the evolution of the text which will be examined at the 2025 meeting of the Intergovernmental

Negotiating Committee. Finally, they provide a short analysis of the major areas of alignment and disjunct that arose during the last negotiating meeting, which may shape the final negotiations in 2025.

Religious voices and constituencies, with practices embraced by communities of believers, represent a major presence with global civil society. The Reverend Mitchell C. Hescox draws on his evangelical commitments, encounters, and experiences, highlighting the difficult task of raising awareness of the gravity of the climate crisis and plastic pollution. An increased awareness should lead to concrete actions aimed at protecting the environment and addressing the ongoing global plastics crisis. To foster awareness and support actions, Hescox interprets key Scriptural passages, articulates the evangelical commitment to protect life, and integrates contributions which depend on his training in Family Systems Theory. The outcome is a moral roadmap for responding to the global plastics crisis and, hopefully, ending it.

Other religious voices further contribute to strengthen religious commitments. Rabbi Leonid Feldman stresses the urgency of repairing our world—Tikkun Olam—because of our responsibility to work towards healing the environment and be good stewards of God's creation. His All-Holiness Ecumenical Patriarch Bartholomew invites us to recognize the invaluable gift of creation, being grateful for such a gift, and to hand it down to future generations. Finally, His Holiness the Dalai Lama exhorts us to embrace our universal responsibility and care for the Earth.

To support political action, the Prince of Monaco invites us to join his commitment and engagement, striving to address the global crisis of plastic pollution. Karen Bullock highlights the rationale informing the Declaration "Our Shared Responsibility to End Plastic Pollution, Protect Human Health, and Advance Social Justice for All," which urges UN negotiators to incorporate provisions into the Treaty aimed at advancing human rights and protecting the vulnerable and the planet against plastic's threats to human and planetary health. Finally, the Declaration highlights the findings that surfaced during the 2024 conference and makes a series of recommendations. To effectively confront the global plastics crisis, legal

and technical solutions, such as the UN Global Plastics Treaty, should be developed and implemented. At the same time, it is necessary to reexamine our relationships with each other and with the Earth. We are all interconnected. Governments, international organizations, corporations, and every citizen share the responsibility to be good stewards of God's creation and critically examine lifestyles and the use of Earth's resources.

To conclude, James F. Keenan, SJ, provides a critical reading of the book. He describes the volume as a manual which voices the concerns of collectives and reaches out to collectives. For Keenan, this book exemplifies our shared responsibility to care for our common home and allows moral agents and civil society to advocate for concrete actions that should lead us to end plastic pollution, protect health, and advance social justice for all human beings while benefiting our planet.

The task of ending plastic pollution might appear unrealistic to some and daunting to others. Our hope is that this book will join many other efforts and collaborative actions—scientific, ethical, religious, and social—which strive to address the plastic pollution crisis and succeed in protecting humankind and the Earth, addressing social and environmental inequities, and entrusting a more just and healthier planet to our current and future generations.