

Ethics and Justice in Global Climate Change

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By

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**Cambridge
Scholars
Publishing**



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This book first published 2026

Cambridge Scholars Publishing

Lady Stephenson Library, Newcastle upon Tyne, NE6 2PA, UK

British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library

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ISBN: 978-1-0364-6341-0

ISBN (Ebook): 978-1-0364-6342-7

*For Juliana and João,
may this work contribute to a more just, sustainable,
and caring future for all.*

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ACKNOWLEDGEMENTS

This book is the result of a long intellectual journey, supported by many individuals and institutions.

First, I would like to thank the Department of Philosophy at the Federal University of Santa Catarina (UFSC) for granting me one year's leave for my postdoctoral research, and CAPES Print for the scholarship that supported the first part of this research (from July to September 2024) at the Uehiro Oxford Institute, University of Oxford, UK. Many thanks to Professor Roger Crisp for his supervision during this time.

A preliminary version of this book was presented during my stay at the Institute of Law, Politics, and Development (DIRPOLIS) at Scuola Superiore Sant'Anna (SSSUP) in Pisa, Italy, from 26 February to 7 March 2025, with support from the Erasmus+ program. I would like to thank Professor Alberto Pirni for his collaboration, as well as all the graduate students of the course "Ethics and Justice in Global Climate Change" for their insightful questions, comments, and contributions.

The second part of my postdoctoral research (from October 2024 to June 2025) was completed at the Federal University of Rio de Janeiro (UFRJ). I am deeply grateful to Professor Marcelo Araujo for his supervision and collaboration. This book was presented and discussed with the students of the course "Teoria das Instituições e Aspectos Filosóficos dos Desenhos Institucionais," and I greatly appreciate their feedback.

I would also like to express my gratitude for the support provided by the PQ-CNPq scholarship (Project n° 303202/2022-0).

To my family, especially my dear daughter Juliana and my husband Darlei Dall'Agnol, thank you for your patience and support. I am especially grateful to him for reading all my drafts and engaging in numerous discussions with me.

INTRODUCTION

Since the last century, global temperatures have risen progressively, and in recent decades we have witnessed record-breaking heat year after year. The pace of change is alarming, and the scientific consensus is unequivocal: climate change is being driven by human activities. According to the Intergovernmental Panel on Climate Change¹ (IPCC), “global surface temperature was 1.09°C higher in 2011–2020 than in 1850–1900, with larger increases over land” (IPCC, 2023, p. 4, A.1.3). This rise is directly linked to the accumulation of greenhouse gases (GHGs) in the atmosphere, a process that began with the Industrial Revolution and has been largely fueled by the combustion of fossil fuels. In 2019, atmospheric carbon dioxide (CO₂) concentrations reached 410 parts per million (ppm) (IPCC, 2023, p. 4, A.1.3), far exceeding the pre-industrial level of approximately 270 ppm and nearing twice that concentration. This unprecedented increase has already begun to destabilize the climate system. Without immediate and far-reaching mitigation efforts, the impacts will only intensify, increasing the risks for both present and future generations.

To understand the objectives and approach of this book, it is essential to begin with a definition and contextualization of the problem. The United Nations Framework Convention on Climate Change (UNFCCC, 1992) defines climate change as “a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere, and which is in addition to natural climate variability observed over comparable time periods.” This definition highlights *three* key aspects: the anthropogenic origin of the phenomenon, the inclusion of both direct causality (such as the burning of fossil fuels) and indirect causality (such as carbon-intensive consumption patterns), and the requirement that the changes go beyond natural variability and persist over time. These three elements will be explored throughout this book, as they are fundamental to understanding the ethical and justice-related dimensions of the global climate crisis.

This understanding of climate change lays the foundation for addressing the critical issue of how much carbon we can still afford to emit

¹ The Intergovernmental Panel on Climate Change (IPCC) is a UN body created in 1988 to assess scientific knowledge on climate change and inform policy through the synthesis of peer-reviewed research.

without exacerbating the global crisis. The degree to which current and future generations will face a hotter and more disrupted world depends on the choices to be taken now. A useful tool in understanding global climate responsibilities is the concept of the *remaining carbon budget*. This budget defines the maximum amount of carbon dioxide that can still be emitted while keeping global temperature rise within internationally agreed limits, specifically well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C, as established by the Paris Agreement (UNFCCC, 2015). The remaining carbon budget is shrinking rapidly as emissions continue, and the Global Carbon Budget (2024) estimates that, at the current rate, there is a 50% chance that global warming will exceed 1.5°C consistently within the next six years (Global Carbon Budget, 2024). This timeline highlights the urgency of reducing emissions not only from fossil fuels but also from other major sources.

In most major economies, the energy sector is the leading source of GHG emissions. However, in Brazil, this burden has historically fallen on agriculture (particularly livestock farming) and the land-use, land-use change, and forestry (LULUCF²) sector. Although Brazil has contributed less to global fossil fuel emissions compared to some other countries, its historical and ongoing land-use practices, particularly the conversion of forested areas to intensive agriculture, place it among the main emitters of greenhouse gases. In 2023, emissions in the LULUCF sector declined significantly, mainly due to a reduction in deforestation in the Amazon (Pivetta, 2024). Nevertheless, in 2024, wildfires in Brazil, intensified by extreme droughts and deliberate burning for agricultural expansion, highlight the dangerous feedback loop between climate change and unsustainable land management. These events not only devastate ecosystems but also substantially increase CO₂ emissions from deforestation.

The primary aim of this book is to explore ethical and justice issues within the context of global climate change. Although land-use emissions are used as a specific case study, the book's broader focus is on the ethical and justice-related questions that arise with global climate action. One key area of focus is the application of the principle of common but differentiated

² In the context of national greenhouse gas (GHG) inventories under the United Nations Framework Convention on Climate Change, LULUCF is a GHG inventory sector that covers anthropogenic emissions and removals of GHG in managed lands, excluding non-CO₂ agricultural emissions. Following the 2006 IPCC Guidelines for National GHG Inventories and their 2019 Refinement, “anthropogenic” land-related GHG fluxes are defined as all those occurring on “managed land”, i.e., “where human interventions and practices have been applied to perform production, ecological or social functions” (IPCC, 2023, pp. 125-6).

responsibilities (CBDR) to developing countries, particularly those like Brazil, which are significant contributors to land-use emissions (Friedlingstein *et al.*, 2022). The book argues that any fair model of responsibility must include obligations to protect biodiversity and uphold human rights, particularly through halting deforestation and reducing emissions from land-use changes. If emerging nations can achieve sustainable development³ without depending on deforestation or the exclusive use of fossil fuels, and at reasonable costs, then maintaining high levels of carbon emissions becomes ethically indefensible. In this context, pursuing lower-emission alternatives should be seen as a *prima facie*⁴ duty for both national governments and global citizens, as their collective actions will shape the planet's future.

A major aspect of this responsibility is the impact on biodiversity. Countries like Brazil, with vast natural reserves such as the Amazon rainforest, play a crucial role in both global climate regulation and the preservation of ecological diversity. Brazil's agricultural practices, particularly intensive livestock farming and the monoculture cultivation of crops like soybeans, need to be critically examined through the lenses of justice and ethics. These practices often result in large-scale deforestation, water overuse, and methane emissions, further exacerbating climate change while simultaneously ignoring environmental and human health impacts, such as pesticide use that is banned in many countries, including those in the European Union. What becomes evident is that this model of food production is both *inefficient* and *unnecessary*. This has been recognized by scholars engaged in discussions of climate justice. As Henry Shue argues,

Grazing beef on pasture converted from tropical forest and growing soybeans to feed Chinese pigs on land converted from tropical forest, as is increasingly happening in the Brazilian Amazon and in the Cerrado, are flagrantly extreme cases of grossly inefficient, totally unnecessary, and wildly destructive agriculture. (Shue, 2021, p. 100)

This critique reinforces the ethical imperative to transition toward more sustainable and equitable land-use practices. These practices must respect local ecological boundaries and protect the human rights and lives of

³ Sustainable development is defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. See: (WCED, 1987).

⁴ A *prima facie* duty is an ethical concept popularized by the philosopher W. D. Ross, referring to a moral obligation that should be fulfilled unless it conflicts with a stronger duty in a given situation. See: (Ross, 2002, pp. 19-20).

Indigenous peoples who defend their forest homes. At the same time, they must acknowledge the global responsibilities of those who benefit from environmental exploitation.

The ethical dilemma at the heart of this book is both complex and urgent, involving questions of intragenerational and intergenerational justice. How can justice be achieved in situations where production practices in one country contribute significantly to global emissions and environmental degradation, while consumers in other regions receive the benefits? Should countries like Brazil be permitted to continue engaging in environmentally harmful practices in the name of development, or should they be incentivized (or even obligated) to transition toward more sustainable alternatives? Given the long-term impacts of land-use emissions, particularly from deforestation and the risk of irreversible *tipping points*⁵ in the Amazon, how should Brazil's current choices be assessed considering future generations' rights and well-being?

Having outlined the ethical urgency arising from climate change and the need for normative guidance, it becomes crucial to clarify the theoretical framework that grounds this analysis. In line with much of contemporary ethical theory, this book adopts a pluralistic approach to normative analysis, recognizing the relevance of three major traditions in moral philosophy: deontology, consequentialism, and virtue ethics. Each offers distinct tools for ethical reflection and will be briefly introduced below:

- 1) Deontological theory grounds key moral principles, such as rights, duties, and justice, that should guide our actions independently of their outcomes.
- 2) Consequentialism provides tools for evaluating the outcomes of different climate policies, particularly in terms of costs, benefits, and the maximization of well-being.
- 3) Virtue ethics emphasizes the character traits and moral dispositions needed to act responsibly in the face of ecological crisis.

While this book acknowledges the importance of all three traditions, its arguments draw *primarily* on the strengths of deontological and consequentialist theories to develop a more comprehensive account of

⁵ Tipping point: A critical threshold beyond which a system undergoes a significant shift, often abruptly and/or irreversibly. In environmental contexts, such as the potential savannization of the Amazon rainforest, this shift could result in irreversible ecological damage, where the forest transitions into a savanna-like ecosystem, as discussed by Lovejoy and Nobre (2019).

moral responsibilities in the context of climate change.⁶ This approach is particularly well-suited to addressing a challenge that involves scientific uncertainty, distributive conflicts across time and space, and complex questions of responsibility and fairness.

The application of these ethical frameworks unfolds progressively across the chapters, each exploring a distinct but interrelated dimension of climate ethics. The book is structured around four central chapters: the first examines rights and duties through a deontological lens; the second evaluates cost-benefit reasoning from a consequentialist perspective; the third delves deeper into intergenerational justice, exploring its implications for climate ethics; and the fourth discusses principles of justice, incorporating various insights to address the complex ethical dimensions of climate change. Next, a more detailed overview of each chapter is provided.

The first chapter, “Ethical Issues in Global Climate Change”, investigates a foundational question: which ethical standards should guide our assessment of climate change and its impacts? This question is central to defining what constitutes “dangerous” climate change (as referenced by the UNFCCC, 1992, Art. 2), guiding morally justified adaptation strategies, and supporting fair political decisions in the face of competing goals. The chapter defends a human rights-based approach, centered on the rights to life, health, and subsistence, as the most appropriate evaluative framework. By treating all individuals as morally equal and focusing on the gravest harms, especially those affecting the most vulnerable, this approach provides a robust ethical basis for climate policy. The chapter also engages with philosophical challenges associated with rights-based reasoning and examines legal cases where climate change is framed as a human rights violation. In the context of Brazil, this approach is particularly relevant given the significant role of land-use emissions, especially those resulting from deforestation, which not only contribute to global climate change but also violate the rights of Indigenous communities and vulnerable populations whose lives and livelihoods are directly impacted by environmental degradation.

The second chapter, “Addressing Risk and Uncertainty in Climate Change,” explores how the inherent uncertainty and risks of climate change influence policymaking in both developed and developing countries. It

⁶ Although this book does not develop its arguments from the standpoint of virtue ethics, some important contributions in climate ethics adopt this perspective. See Stephen M. Gardiner, *A Perfect Moral Storm* (2011), especially Chapter 10, where he draws on virtue theory to explore the moral dynamics of climate inaction and the vulnerabilities to ethically compromised behavior shaped by certain roles and ways of life.

critically examines the limitations of cost–benefit analysis in contexts of deep uncertainty and considers whether such a framework is ethically adequate. As an alternative, the chapter examines the precautionary principle (PP), which advocates for anticipatory action in the face of uncertainty. It emphasizes proactive mitigation, the importance of robust adaptation strategies, and the need for ethical scrutiny of emerging interventions such as geoengineering. By emphasizing the moral and practical urgency of acting before irreversible damage occurs, the chapter lays the foundation for assessing emissions from the LULUCF sector in Brazil, particularly those linked to deforestation.

The third chapter introduces an additional ethical dimension: the long atmospheric lifespan of greenhouse gases. Since current emissions will shape the living conditions of future generations, it raises two closely related questions: do current generations have moral obligations toward future people? And if so, how should the interests of future generations be weighed or “discounted”? These intergenerational concerns are explored alongside broader questions of distributive justice. These concerns also challenge prevailing assumptions about moral distance and impartiality, inviting a reassessment of how climate ethics must account for temporally extended harms and responsibilities. This chapter thus lays the groundwork for understanding how ethical theories and principles must evolve to fairly incorporate the rights and needs of those who will come after us.

The fourth and final chapter, “Climate Change and the Distribution of Responsibilities,” addresses the pressing question of who should bear the burdens of climate action. It critically examines the main ethical principles used to allocate these responsibilities, namely, the polluter pays principle (PPP), the beneficiary pays principle (BPP), and the ability to pay principle (APP), as well as hybrid approaches that seek to balance these frameworks. The chapter then applies two reformulated hybrid principles, *the poverty and biodiversity sensitive polluter pays principle* (PBSPPP) and *the history and biodiversity sensitive ability to pay principle* (HBSAPP), to assess responsibilities, particularly considering the significant role of land-use emissions. As we will see, this approach may complement the ethical commitments articulated in the UNESCO *Declaration of Ethical Principles in Relation to Climate Change* (2017),⁷ particularly those concerning

⁷ The Declaration establishes a moral framework to guide climate action. It emphasizes justice, solidarity, and responsibility, calling on all actors, especially those with greater capacity, to contribute fairly to mitigation and adaptation. The Declaration promotes climate justice, protection of vulnerable groups and future generations, respect for human rights, and the ethical use of scientific knowledge to safeguard both people and the planet.

justice, equity, and the protection of vulnerable groups. Just as the Declaration elaborates ethical principles to guide decision-making, policy formulation, and other climate-related actions, the two reformulated hybrid principles proposed here may help to inform normative frameworks by expanding and strengthening the concept of justice. While the Declaration promotes broad environmental values, it does not recognize biodiversity protection as an independent ethical principle, nor does it refer directly or consistently to “biodiversity.” By contrast, the hybrid principles proposed here aim to address this normative gap by grounding biodiversity preservation as an indispensable component of a just response to climate change, especially in the context of emissions from land-use change and agriculture.

This book argues that climate justice cannot be meaningfully advanced without confronting both global and local dimensions of responsibility, particularly in relation to land-use practices and ecological integrity. Brazil’s case, with its crucial role in sustaining global biodiversity and contributing to land-use emissions, exemplifies the broader ethical challenges of balancing development and environmental protection. The decisions made within its borders reverberate far beyond the national context, influencing the climate future of the planet and the rights of present and future generations. By bringing together philosophical reasoning and empirical realities, this book seeks to articulate the ethical principles required to guide just and sustainable responses to climate change, responses that recognize and address the responsibilities of both emitters and beneficiaries in an unequal and interconnected world.

CHAPTER 1

ETHICAL ISSUES IN GLOBAL CLIMATE CHANGE AND HUMAN RIGHTS

Since the early 20th century, scientists have observed shifts in the Earth's climate that cannot be explained by natural processes alone. Decades of research have confirmed that these changes are primarily driven by human activities such as deforestation, fossil fuel burning, and large-scale industrialization, what is commonly referred to as anthropogenic climate change. These disruptions have far-reaching consequences, not only for ecosystems but also for fundamental aspects of human life, including health, security, and livelihoods.

The Intergovernmental Panel on Climate Change (IPCC) reinforced these findings in its Sixth Assessment Report (AR6) in 2023, further confirming the scientific consensus on climate change. With each successive report, the urgency of the crisis has become more evident. In 2021, UN Secretary-General António Guterres referred to the IPCC report as a “code red for humanity”, underscoring the critical need for immediate action. As the impacts of climate change intensify, they raise urgent ethical questions: 1) how should the risks and burdens be distributed among nations, industries, and individuals? 2) what are our responsibilities to the environment and future generations?

These questions challenge us to reconsider core ethical principles, such as human rights, the precautionary principle, and the harm principle, within the context of a warming planet. Year after year, climate change intensifies, exacerbating human suffering and accelerating biodiversity loss, pushing countless species toward extinction. This ongoing crisis highlights the urgent need to protect ecosystems, reinforcing the moral imperative to address both the human and environmental consequences of climate change.

This chapter explores the ethical challenges posed by climate change, with a focus on the intersections between human rights, environmental responsibilities, and climate justice. Through critical engagement with these issues, we will examine how ethical frameworks can help to guide us toward a more just and sustainable future.

In this first chapter, we will explore how the application of a human rights perspective can contribute to addressing the ethical dimensions of climate change. We will critically examine both the potential benefits and limitations of this approach, particularly in shaping state responsibilities and responses at the national, regional, and international levels.⁸

Human rights frameworks focus on protecting fundamental human freedoms and dignity, and this lens can be particularly useful in addressing the harmful effects of climate change on vulnerable populations. By examining whether such an approach can improve responses to climate change, we can better understand its role in promoting fairness, justice, and accountability in global climate action.

However, while a human rights approach is important, it does not necessarily capture every moral aspect of climate change. For example, it does not fully address the value of non-human entities, like ecosystems or animal species, which are also deeply affected by climate change. Nonetheless, the human rights perspective provides a crucial foundation for a comprehensive understanding of the issue. Without it, our assessment of the impacts of climate change would lack important ethical considerations, leading to an incomplete and insufficient analysis of the crisis.

1.1 Practical and Ethical Challenges of Climate Change

To fully grasp these ethical challenges, we must first understand the scientific evidence of climate change and its consequences. The most recent IPCC Synthesis Report provides a clear warning about the role of human activities in driving climate change. According to the report:

A.1. Human activities, principally through emissions of greenhouse gases, have unequivocally caused global warming (...) *Global greenhouse gas emissions have continued to increase, with unequal historical and ongoing contributions* arising from unsustainable energy use, land use and land-use change, lifestyles and patterns of consumption and production across regions, between and within

⁸ While some scholars argue that the Paris Agreement (2015) qualifies as a human rights treaty, Brazil's judiciary is the first to formally recognize it as such. In a landmark ruling, the Supreme Federal Court determined that the agreement holds supralegal status, meaning its provisions take precedence over conflicting legal and sublegal norms. As a result, any law enacted by Brazil's Congress that contradicts the Paris Agreement would be overridden. This judicial recognition not only strengthens the treaty's legal standing within Brazil but could also set a precedent for courts worldwide to follow, further reinforcing the connection between climate commitments and human rights (Brazil, 2022).

countries, and among individuals (*high confidence*). (IPCC, 2023, p. 04)

The warning emphasizes the significant *role that human activities* play in climate change, which is already worsening climate extremes. As the report states, “Human activities, principally through emissions of greenhouse gases, have [undeniably] caused global warming” (IPCC, 2023). These activities are a major driver of the climate crisis, which is making extreme weather events more frequent and severe.

A.2 of the report adds:

This has led to widespread adverse impacts and related losses and damages **to nature and people** (*high confidence*). Vulnerable communities who have historically contributed the least to current climate change are disproportionately affected (*high confidence*). (IPCC, 2023)

The report also emphasizes that groups like least developed countries (LDCs), Indigenous peoples, small-scale food producers, and low-income households are the most negatively affected. These populations face increased risks such as food insecurity and reduced water availability. This global perspective on the disproportionate impacts of climate change is further illustrated by recent extreme weather events, which have intensified in both frequency and severity. For example, flooding in Brazil has more than doubled compared to the 1980s and 1990s, causing significant human and economic losses. In 2024, the state of Rio Grande do Sul in southern Brazil experienced severe flooding, exacerbated by climate change. In the same year, the Amazon rainforest experienced its worst drought on record, threatening the stability of its ecosystem (Reuters, 2024). In January 2025, California experienced one of its most devastating wildfires. Scientists have identified human-caused climate change as a significant factor contributing to the extreme conditions that fueled the fire, making it one of the most destructive in Los Angeles’ history (WWA, 2025).

These findings show that the impacts of climate change are not only global but also deeply unequal, with those least responsible for the problem suffering the most. This highlights the need for urgent action to protect the most vulnerable populations and address the systemic injustices that exacerbate their suffering. An adequate analysis of the ethical dimensions of global climate change must consider the diverse ways in which it impacts both people’s fundamental interests and the natural world. The fundamental interests at stake, including survival, health, and access to essential resources, are central concerns for any theory of justice. This raises a critical normative question: given the profound and ongoing effects of climate

change, what criteria should be used to assess its impacts in a way that is both ethically sound and practically effective?

1.2 Evaluating the Impacts of Climate Change

One important criterion, among others, is that human activities contributing to climate change clearly infringe upon human rights. In the article “Climate Change, Human Rights and Moral Thresholds”, Simon Caney argues that anthropogenic climate change threatens the enjoyment of three fundamental human rights: *the right to life, to health, and to subsistence*.⁹ A human rights perspective, which recognizes the equal moral worth of all individuals, maintains that climate change should, at least in part, be assessed based on its impact on fundamental human rights.

Caney bases his argument on *a negative* conception of rights; specifically, the right not to be harmed by others (Caney 2010, p. 166). Since climate change is caused by human actions, the principle of not causing harm would be sufficient to defend the *right to live in an unpolluted environment*, which encompasses the rights to life, health, and subsistence. Caney does not reject a more expansive or positive interpretation of human rights (2015, p. 276). His argument is that *we do not need* to rely on a more ambitious conception of rights to see that climate change threatens these three rights. They are the minimum requirements to gain the greatest possible political and theoretical consensus.

First, human-induced climate change poses a direct threat to **the human right to life**, as defined in the *International Covenant on Civil and Political Rights* (ICCPR, 1966). Article 6.1 states that “*every human being has the inherent right to life*” and *must not be “arbitrarily deprived of life”* (ICCPR, 1966). Extreme weather events intensified by anthropogenic climate change—such as storm surges, heatwaves, and wildfires—result in loss of life, thereby violating this fundamental right.

Second, climate change has consequences that undermine “**the human right to health**.” This right can be interpreted in several ways. The *International Covenant on Economic, Social and Cultural Rights* (ICESCR, 1966) recognizes “*the right of everyone to the enjoyment of the highest attainable standard of physical and mental health*” (Article 12.1). However, even without relying on this broader and potentially contested interpretation, we can frame the right to health in simpler terms: *every individual has the right not to be exposed to serious and avoidable threats to their health*

⁹ In other texts, Caney (2009b, p. 233) discusses not only how climate change threatens fundamental human rights such as the right to life, health, and subsistence, but also emphasizes the right to protection from forced eviction.

(Caney, 2010). From this perspective, the effects of climate change jeopardize the right to health. Scientific projections indicate that rising global temperatures will lead to an increase in diseases such as dengue fever, cardio-respiratory problems, and heat-related illnesses, all of which pose significant health risks, particularly to vulnerable populations.

Third, the side effects of anthropogenic climate change threaten **the human right to subsistence**. Similar to the other rights, this can also be interpreted in various ways. The International Covenant on Economic, Social and Cultural Rights (ICESCR) and the Universal Declaration of Human Rights (UDHR) (1948) both emphasize this right. For instance, Article 11.1 of the ICESCR highlights “the right of everyone to an adequate standard of living for himself and his family, including adequate food,” while Article 11.2 declares “the fundamental right of everyone to be free from hunger”. Similarly, Article 25.1 of the UDHR states:

Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care ... (United Nations, 1948)

Anthropogenic climate change undermines this right by intensifying droughts that threaten food and water supplies, submerging fertile land due to rising sea levels, and triggering extreme weather events such as floods and storms that destroy crops and disrupt agricultural activities. These impacts directly harm the ability of people to secure the basic means of survival, thereby violating their right to subsistence.

Caney highlights that climate change can violate two of the *basic rights*¹⁰ identified by Henry Shue: *physical security* (the right to protection from harm) and *economic security* (the right to live free from economic deprivation). He then raises a critical question: “why has Shue not made more of the links between climate change, on the one hand, and rights (especially basic rights), on the other?” (Caney, 2009b, p. 233). Caney suggests that this may be a deliberate choice. He argues that Shue might avoid invoking rights-based arguments in the climate context in order to avoid controversial assumptions that could undermine the persuasiveness of his broader claims. After all, the very concept of basic rights is contested by

¹⁰ Shue (1980) defines rights as justified demands that one can reasonably expect others to fulfill, supported by social guarantees. Among these, basic rights (such as security, subsistence, and liberty) take precedence over others. They provide the minimum protection for the vulnerable by addressing essential needs like food and shelter, and by establishing a threshold below which no one should be allowed to fall.

some scholars, and introducing such debates might undermine the clarity and reach of his arguments.

However, Caney proposes an alternative path. Instead of avoiding the language of rights altogether, he argues that we can and should present both rights-based and non-rights-based arguments for addressing climate change. This strategy enables the formation of an *overlapping consensus* whereby different moral frameworks converge on shared conclusions—such as the need for urgent mitigation and adaptation measures. In this way, a rights-centered rationale can be included without excluding those who are skeptical of rights discourse. Caney maintains that by adopting this inclusive strategy, it is possible to prioritize human rights in climate debates while simultaneously appealing to a broader audience.

While Caney is primarily focused on how climate change threatens *negative rights*, such as the right not to be harmed or deprived, Shue offers a more demanding and robust normative framework based on *basic rights*. Basic rights are not only necessary for survival but also require strong positive duties: the duty to avoid depriving others, the duty to protect them from deprivation, and the duty to aid the deprived. Unlike Caney, who seeks broad agreement through less contentious assumptions, Shue is less concerned with strategic acceptance and more committed to articulating the minimal moral protections owed to all. Even though Shue does not frame his theory of basic rights explicitly in the context of climate change, his model offers a more demanding foundation for justice in light of the harms caused by climate impacts.

In addition to raising issues related to respecting human rights, climate change presents other ethical challenges. For example, Stephen Gardiner compares climate change to a “perfect moral storm.” In his metaphor, there are three distinct “storms,” each representing significant obstacles to our capacity for ethical behavior. “*The first storm is global*” (Gardiner, 2011, p. 7). Its defining characteristic is that the wealthiest nations and their affluent individuals employ significant power to influence outcomes in ways that primarily serve their own interests, often to the detriment of poorer nations and their populations. “*The second storm is intergenerational*” (Gardiner, 2011, p. 7). This “storm” is marked by a similar but more pronounced asymmetry of power, where the current generation has a significant impact on the prospects of coming generations, while those future generations cannot affect the present. In his view, the intergenerational “storm” is the most critical of the three, presenting profound opportunities for exploitation. “*The third storm is theoretical*” (Gardiner, 2011, p. 7). Ideally, in facing the first two storms, we would have well-established general theories to guide us. Unfortunately, that is not the

reality. Current theories are notably underdeveloped in key areas such as intergenerational ethics, international justice, scientific uncertainty, and the human relationship with animals and nature.

One criticism of a purely human-centered human rights approach to climate ethics is that a comprehensive account of what is wrong with anthropogenic climate change must extend beyond its impact on human beings. It should also recognize the fundamental importance of its effects on non-human animals and the natural world. In this context, the concept of an “ecological storm” emerges as a significant yet distinct issue within climate ethics. While Gardiner, for the sake of simplicity, hesitates to include the ecological storm as a central element of the “perfect moral storm,” its ethical significance cannot be overlooked. Acknowledging the ecological storm as a key concern is essential for a more complete understanding of climate ethics. As we will see in Chapter 4, this perspective aligns with the convergence thesis, which underscores the deep interconnection between human well-being and ecosystem health. Therefore, adopting sustainable practices to mitigate climate change is crucial not only for protecting human rights but also for preserving the integrity of the natural world.

However, to effectively assess the impacts of climate change through a human rights framework, it is essential to first establish a clear understanding of the ethical principles involved, beginning with a conceptual analysis of human rights.

1.3 Conceptual Analysis of Human Rights

Human rights can be defined as basic moral guarantees that all human beings possess, regardless of whether legislation ensures them in any given country or culture, simply by virtue of being human. Drawing on the contributions of various scholars (Nickel, 2007; Shue, 1996), it is possible to identify fundamental characteristics in the contemporary definition of human rights, of which the most relevant for the present work are outlined below.

i) Human Rights as “Rights”: All rights possess (a) a holder, who is the party entitled to the right; (b) an object, which refers to what is guaranteed by the right; and (c) a duty-bearer, the party responsible for ensuring the right. Most human rights are claim rights, meaning that they impose duties or responsibilities on duty-bearers. These rights can guarantee freedom protections, or benefits to their holders. The associated duties require actions such as respecting, protecting, and providing. While some legal rights may be considered high-priority goals, requiring only

progressive realization, human rights are generally binding in the sense of imposing obligations on specific parties.

ii) Plurality of Human Rights: Human rights address a wide range of issues and challenges, such as ensuring fair trials, eradicating slavery, preventing genocide, guaranteeing education, or securing a non-polluted environment. Although some philosophers advocate for a more limited list of human rights, plurality is widely accepted.

iii) Priority of Human Rights: Human rights are high-priority moral standards that are strong enough to take precedence when they conflict with other considerations. They demand robust justifications that apply globally to sustain their independence and priority. Without such justifications, they could not compete with considerations like national stability and security, self-determination, or economic prosperity. In certain circumstances, they can be weighed against other rights or interests, resulting in varying priorities among different human rights. For instance, the right to life is generally considered more fundamental than the right to privacy.

iv) Universality of Human Rights: All human beings possess human rights regardless of characteristics such as race, gender, religion, social status, or nationality. These rights are universal in the sense that they apply to everyone and are independent of a specific country's culture or legal system. However, universality may have qualifications. For example, the right to vote may only be exercised by adult citizens and only in their respective countries. Other rights, such as freedom of movement, may be temporarily restricted, as in the case of convictions for serious crimes. Additionally, some human rights treaties focus on vulnerable groups, such as racial minorities, women, Indigenous peoples, and children.

v) Moral Limits: Human rights represent moral "limits" below which people should not fall (Shue, 1996, p. 18). They establish the most fundamental moral requirements that individuals can demand from others.

The analysis provided above does not exhaust all general characteristics of human rights, but offers a solid foundation for a comprehensive definition of the concept. This foundation enables the construction of a unified understanding, even among differing perspectives. From this groundwork, it will be possible to move on to the subsequent sections, which will examine the application of human rights in the context of climate change.

1.4 Applying Human Rights in Addressing Climate Change

From the discussion above, several applications of human rights in addressing climate change can be identified.

First, it is widely recognized that the three human rights most threatened by climate change (life, health, and food security) are binding on governments. Science shows that the adverse effects of anthropogenic climate change undermine these rights, thus justifying the obligation of nations to mitigate emissions and adapt to the impacts. Adherence to international agreements, such as the Paris Agreement (UNFCCC, 2015), reinforces the obligation of states to confront climate change, while protecting these rights and ensuring the implementation of adequate measures. Furthermore, if climate change is a human rights issue, compensation for those whose rights have been violated can also be justified. However, it is crucial to recognize that compensation cannot replace mitigation and adaptation actions; just as one cannot justify an attack by claiming the victim can receive compensation, the violation of rights should not be compensated instead of being avoided.

Second, given the high priority assigned to human rights, their protection should prevail in situations where they conflict with other issues, such as political stability or economic growth. In the context of climate change, this means that states have an obligation to respect, protect, and fulfill human rights, even in the face of economic or political challenges. The need to meet economic rights cannot be used as an excuse to avoid decisive action in reducing emissions, even if such actions require significant investment (for instance, renewable energy investment). Additionally, private property, especially in the context of the “Capitalocene”,¹¹ should not be considered superior to fundamental rights to life, health, and subsistence. The defense of private property rights should not be used as a justification for environmental harm or human rights violations. In other words, while property ownership is an important legal and economic

¹¹ The term “Capitalocene”, popularized by the philosopher and sociologist Jason W. Moore (2017), questions whether we are truly living in the Anthropocene (the “Age of Man”) with its technocentric views, or if we are in the “Capitalocene” (the “Age of Capital”), shaped by the relentless accumulation of capital. Moore argues that global capitalism is the main driver of environmental and social transformations, playing a crucial role in climate change and the degradation of ecosystems. The “Capitalocene” is presented as an alternative to the “Anthropocene”, which focuses on human influence in general, by highlighting capitalism as a central factor in the intensification of these environmental and social impacts.

principle, it does not override the need to protect the environment and uphold fundamental human rights.

Instead, policies should prioritize these rights over purely economic interests, ensuring that development does not come at the expense of ecological sustainability or human well-being. International cooperation and progress in clean technologies are crucial to balancing these responsibilities and mitigating the tension between economic development and human rights protection. By working together globally and investing in sustainable innovations, societies can find ways to balance economic growth with environmental and human rights protection, reducing the conflicts between these objectives.

Third, a universal human rights-based approach can help to address both intergenerational and intragenerational injustices linked to climate change. These injustices arise from the fact that historically, some countries have contributed more to climate change, while populations in developing nations with vulnerable infrastructure suffer the most severe environmental and economic impacts. Moreover, while both past and present generations have contributed to the emissions driving global warming, the impacts of climate change fall disproportionately on today's children and future generations.

This intergenerational injustice is compounded by the fact that children and future generations have no voice in political decisions regarding the management of climate risks. Recognizing that everyone has equal rights can reinforce the responsibility of wealthier countries in combating climate change and promote just and effective actions.

Fourth, given that human rights establish fundamental moral limits below which people should not fall, it is unjust for developing countries, with individuals in extreme poverty, to be forced to restrict their subsistence emissions, thus perpetuating their poverty, while those who enjoy greater affluence,¹² with emissions resulting from luxurious activities, are not subject to the same restrictions (Shue, 2014). Some countries have achieved economic growth through the intensive use of fossil fuels, while developing countries are pressured to limit their use of these resources in their development strategies. In this way, the application of human rights in climate policies promotes a more equitable and just approach which protects

¹² It is relevant to mention here that President Donald Trump withdrew the United States from the Paris Agreement twice. The first withdrawal was in 2017, and the second, as part of one of the first executive actions of his administration, occurred in 2025. This makes negotiations and the achievement of targets even more challenging, as the United States, with its large population and affluent lifestyle, accounts for some of the highest greenhouse gas emissions globally.

the most vulnerable and ensures they are not forced to bear the disproportionate burden of mitigating climate threats. This understanding aligns with Article 4 of the Paris Agreement (2015), which reaffirms the Principle of Common but Differentiated Responsibilities and Respective Capabilities, recognizing that developed countries should take the lead in achieving economy-wide absolute emission reduction targets, while developing countries are allowed a more gradual path toward peaking their emissions, in light of their national circumstances.

Fifth, threats to the rights to life, health, and subsistence caused by climate change are forcing many people to relocate from their places of origin. Experts point out that these impacts are already creating millions of climate refugees and use the term “refugees” to refer to all those displaced due to climate change (Brown, 2024). However, the definition of “refugee” under international law does not cover those displaced by the impacts of climate change, but only those fleeing their countries “due to a well-founded fear of persecution for reasons of race, religion, nationality, membership in a particular social group, or political opinion” (Convention Relating to the Status of Refugees, 1951, Art. 1).

In some contexts, the definition may extend to people escaping “events disturbing public order”. Therefore, the 1951 Convention does not cover the possibility of those affected by climate change seeking refugee status in the countries to which they have relocated. Donald Brown argues that, since climate change often causes internal displacement before forcing international migration, and that in some cases, climate displacement interacts with armed conflicts and violence, including these people in the refugee definition could be justified: “People may have a valid claim to refugee status, for example, where the adverse effects of climate change interact with armed conflict and violence” (Brown, 2024, p. 136). Given the increasing severity of climate change, the term “refugee” should be expanded to include those displaced by these causes. After addressing the applications, we now turn to the challenges in applying human rights.

1.5 Challenges of the Legal Application of Human Rights to Climate Change and Climate Litigation

Climate change impacts can significantly undermine the enjoyment of fundamental rights such as life, health, and subsistence, but determining whether such interference amounts to a legal violation under international and national law remains a complex challenge. This complexity arises from several factors, including the difficulty of attributing specific climate-related harms to actors, the varying legal interpretations of states’ obligations

to prevent environmental harm, and the challenges of enforcing human rights protections in the context of transboundary and intergenerational impacts. Additionally, existing legal frameworks may not be fully equipped to address the unique nature of climate-related rights violations, requiring the development of new legal mechanisms or the expansion of current human rights doctrines to hold governments and corporations accountable for their contributions to climate change.

To explore this, let us revisit the defining characteristics presented in item 1.3 (i). In the specific case of human rights threatened by the effects of anthropogenic climate change, the rights holders include all individuals whose fundamental rights are at risk, the protected rights encompass life, health, and subsistence, and the duty-bearers are nations, governmental entities, courts, and other relevant institutions responsible for upholding these rights.

According to some experts, applying this approach to establish a legal violation in the context of climate change has proven challenging (Lewis & Brown, 2024, p. 54). For instance, in 2005, in one of the first cases attempting to address climate change as a human rights issue, the Inter-American Commission on Human Rights (IACHR) rejected a petition by the Inuit people, who claimed that the United States' failure to address climate change constituted a violation of their human rights under the American Declaration of the Rights and Duties of Man (1948). Although the Commission acknowledged the disruptions to the livelihoods and culture of the Inuit people, it refused to proceed with the petition, arguing that the petitioners had not provided enough information for the IACHR to determine whether the alleged facts would constitute a violation of rights protected by the American Declaration (Inuit Petition, 2005).

The indirect, cumulative, transboundary, and long-term nature of greenhouse gas (GHG) emissions presents a significant challenge for those seeking to demonstrate human rights violations in the context of climate change. Traditionally, international law assigns obligations to states concerning people within their territory and jurisdiction. However, climate change makes it difficult to establish a clear causal link between global emissions and their local impacts which complicates the attribution of responsibility for the resulting harms. For example, while an illegal discharge of toxic waste is generally easy to trace back to the responsible company or individual, allowing for a clear identification of the damage to the environment and public health, climate change results from accumulated emissions from various sources over decades. This makes the attribution of responsibility and direct compensation much more complicated. Moreover, the harmful effects of these emissions, such as extreme weather events, can