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Climate Justice and Ethics:

A Critical Examination of Past, Present, and Future

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Introduction

Climate change is not solely centered around environmental issues, as it pertains to ethical, social, and political challenges as well. The most significant consequences, such as extreme weather and climate events, biodiversity loss, and rising global temperatures, disproportionately target marginalized communities. Therefore, the consequences of climate change will unfold more acutely on those who contribute the least to climate issues, namely Indigenous populations, countries of the Global South, and economically disadvantaged groups. This inequality has exacerbated the debate on climate justice, making climate change not only an environmental challenge but also a fundamental issue of equity and human rights. Consequently, it is important to keep in mind that as climate action becomes more urgent, central themes such as historical responsibility, corporate and governmental obligations, and the need for fair policy solutions must be leveraged to gain a deep understanding of climate justice, its progress, its challenges, and its practical relevance. Although climate justice is gaining increasing recognition, significant gaps persist both in its theoretical development and in its concrete implementation. Despite the fact that the Paris Agreement and the United Nations Framework Convention on Climate Change (UNFCCC) acknowledge the need to consider equity in climate governance, they do not provide a binding mechanism to impose historical responsibility or ensure a fair distribution of the burdens and benefits of climate action.

The aim of this study is to attempt to lessen this gap by exploring the historical development of climate justice, its normative basis, and its empirical representations in the international climate framework. The focus on the intersection of historical responsibility, policy implementation, and equity helps further clarify the nuances of climate justice and how it should be pursued in international climate action.

To achieve this objective, the research will first trace the historical trajectory of climate justice, from its conceptual origins to its institutional anchoring. Secondly, the study will reflect on the concept of historical responsibility and its relationship with contemporary climate change mitigation policies, examining how global climate agreements attempt to address, or fail to address, climate inequalities. Thirdly, it will delve into the moral principles of climate justice, particularly distributive justice and intergenerational equity. Finally, the study will highlight some of the major challenges and critiques associated with the future trajectory of climate justice.

With regards to methodology, this research adopts a mixed-methods approach, based on qualitative analysis of international climate agreements and relevant policy documents, along with case studies on climate justice initiatives in various global contexts, with a particular focus on the Global South and how peripheral regions address climate inequalities. Additionally, it will examine discourse analysis within global climate treaties and agreements, particularly their integration into national climate policies. Lastly, it will draw on ethical literature to evaluate the strengths and weaknesses of existing climate justice frameworks. This approach will facilitate an in-depth exploration of climate justice as a conceptual framework, with particular emphasis on translating theories into action through concrete case studies.

In conclusion, this study explores the evolution of climate justice, its ethical foundations, and its role in global climate policy. It examines how historical responsibility, equity, and justice shape climate action. Ultimately, it highlights both progress and ongoing challenges in achieving fair and effective climate governance.

1 The Evolution of Climate Justice: Ethical Foundations, Historical Development, and Global Applications

1.1 The Concept of Climate Justice

The concept of climate justice originally emerges from the environmental justice movement, which historically challenges the asymmetric distribution of environmental risks and the exclusion of vulnerable populations from decision-making processes.

While climate justice is now a globally relevant issue, its roots are in grassroots movements that previously transformed environmentalism into a struggle for social justice (Schlosberg, Collins, 2014, p. 359).

A key factor to take into account when discussing the concept of climate justice is the fact that the connection between climate justice and sustainability is increasingly at the center of global environmental debates. Sustainability focuses on a balance between environmental, social, and economic aspects to ensure lasting ecological stability, while climate justice emphasizes the fair distribution of environmental benefits and costs, particularly for historically marginalized communities (Agyeman, Evans, 2003, pp. 2-3, pp. 9-10).

These two concepts are closely connected: without a fair distribution of resources, sustainability is difficult to achieve, and without sustainable practices, climate justice cannot be reached.

On the other hand, environmental degradation disproportionately impacts the most vulnerable communities, both locally and globally. Numerous studies have highlighted that countries with higher economic inequality tend to have poorer environmental quality, as they lack adequate environmental protections and fair access to resources. On a national level, in particular, states with inequalities in political power, – such as those related with poor electoral participation, fiscal justice, and access to essential services – often have weaker environmental laws, leading to higher pollution levels and severe health consequences. This phenomenon is evident in many industrialized nations, where low-income and racially marginalized communities are the most exposed to environmental pollution. People living in areas characterized by high social, economic, or racial segregation are indeed more vulnerable to harmful environmental conditions, such as air pollution, industrial waste, and toxic waste disposal sites (Schlosberg, Collins, 2014, p. 360).

Globally, climate change follows similar dynamics: wealthy countries are responsible for the majority of greenhouse gas emissions, while developing countries, which contribute less to global emissions, suffer the most severe consequences, such as rising sea levels,

extreme weather events, and food insecurity. Therefore, the concept of “climate debt” has been developed to address this historical disparity, arguing that developed countries should compensate poorer nations for the disproportionate damage they have suffered due to climate change (Agyeman, Evans, 2003, pp. 30-34).

However, many rich countries continue to delay concrete actions, often resorting to mechanisms such as carbon trading and emission offsets, instead of committing to directly reducing the use of fossil fuels.

As a result, sustainability is often presented as a solution to environmental injustice, as it promotes a long-term approach to environmental protection that also considers equity and responsibilities toward future generations. However, the sustainability discussion has long been dominated by economic and environmental concerns, often neglecting the social and legal aspects, which are crucial for addressing environmental injustices in a comprehensive and effective way.

A true “just sustainability” approach recognizes that environmental sustainability must be closely tied to social and economic justice issues. It is essential to ensure that economic growth does not harm vulnerable populations. Sustainability policies, in the past, have often been influenced by powerful economic interests, ignoring the needs of marginalized communities. For example, although sustainable development policies promote energy efficiency and green technologies, these solutions are often inaccessible to low-income individuals who cannot afford to invest in renewable energy or energy-efficient housing. Furthermore, structural barriers that hinder equitable sustainability must be addressed. To achieve sustainability, a more equitable distribution of resources and greater attention to shared responsibilities between different societies is necessary. However, this change is difficult to achieve because it involves altering behaviors that go against economic interests, particularly for those who benefit most from unsustainable practices.

The connection between climate justice and sustainability, therefore, requires policies that integrate equity, participation, and environmental protection. Several initiatives demonstrate how these concepts can be effectively combined. Local organizations, for instance, have played a key role in supporting environmental policies that are not only sustainable but also just. Initiatives like those conducted by Alternatives for Community and Environment (ACE) in Boston and the Urban Habitat Program in San Francisco have managed to combine the principles of environmental justice with sustainability policies, ensuring that poorer and racially diverse communities are not excluded from the transition to green policies (Agyeman, Evans, 2003, p. 4).

Additionally, while global agreements like the Kyoto Protocol and the Paris Agreement have attempted to establish an international framework for emission reductions, they have been criticized for not adequately addressing climate justice issues. A more just approach would require legally binding commitments to take on historical responsibility and provide financial reparations to regions affected by climate change, ensuring that the burden of mitigation does not unfairly fall on developing countries. At last, despite growing awareness of the link between climate justice and sustainability, many local sustainability initiatives still do not fully address justice-related issues. As a matter of fact, while over 40% of major U.S. cities have sustainability programs, only a small percentage explicitly address environmental justice concerns (Agyeman, Evans, 2003, p. 9). This demonstrates the need for greater commitment, both institutionally and socially, to bridge the gap between sustainability and climate justice.

As environmental crises become increasingly severe, it will be crucial for justice-based sustainability frameworks to merge with climate action policies in building more resilient societies. Moving forward, it is essential for policymakers, activists, and global leaders to work together to ensure that sustainability is not just an environmental goal, but a justice-driven movement that uplifts all communities.

1.2 Towards Climate Justice, Beyond Emissions

Climate change has evolved from a scientific observation into a global ethical and political challenge. From early warnings about atmospheric imbalances to today's calls for climate justice and equity, our understanding of the climate crisis has grown increasingly complex. The scientific foundation of climate change lies in the greenhouse effect, a natural process essential to life on Earth. However, since the Industrial Revolution, human activities have drastically amplified this effect, increasing the concentration of greenhouse gases (GHGs) such as CO_2 and CH_4 (Buizza, 2023, pp. 22-24).

Yet, climate change is not only a scientific issue, it is also a matter of justice. Emission inequalities reveal deep injustices. While China, the United States, and the EU have been the largest total emitters – particularly from 1990 to 2016 – per capita data show that countries like the United States, Australia, Canada and Russia, are far more responsible on an individual level. In contrast, India has emitted only 30 tons of CO_2 per capita in the last 26 years, comparable to what a person living in the top four polluters emits in the atmosphere in just two years (Buizza, 2023, pp. 34-35). This disparity highlights the ethical imperative embedded in the principle of "common but differentiated responsibilities" in international climate negotiations.

The injustices of climate change are not only current, but also historical. As Nishtha Singh (2023, pp. 49-52) writes in her section of *Global Climate Justice: Theory and Practice*, these injustices are connected to colonialism, which radically reorganized the ecosystems of the Global South to fuel European industrial growth. Colonial powers introduced extractive economies that destroyed biodiversity, displaced Indigenous communities, and dismantled traditional ecological knowledge. The effects of this system persist: many former colonies are now among the most climate-vulnerable, despite having contributed minimally to emissions. In fact, greenhouse gas emissions have been distributed very unevenly worldwide. The United States alone accounts historically for about 40% of the global emissions debt. In contrast, countries such as Bangladesh, India, China, and Nepal can be considered "carbon creditors", since their proportion of the world's population is much greater than their contribution to emissions (Singh, 2023, p.55). And yet, it is precisely these historically marginalized communities who suffer the greatest damages. In fact, even after the end of colonialism, the legacy of extractive development continued. Wealth and power reside in the hands of a few, meaning those most responsible for climate change can adapt, while the poor face the harshest impacts. Today, 70% of the global income ends up in the pockets of the wealthiest 20%, while the poorest 20% receives only about 2% of the global income.

Exemplarily, extreme wealth disparities are seen in cases such as Bill Gates's net worth exceeding Haiti's 30-year GDP. Research shows that unequal societies face more crime, violence, addiction, poor health, and higher infant mortality, leading to exploitation of people and the environment, especially in the Global South, creating fragile systems (Singh, 2023, pp.56-57).

The persistence of these models shows that climate justice requires more than just emission reductions: it calls for reparative justice that addresses the structural inequalities underlying vulnerability.

The international community's response to climate change reflects the tension between the need for broad consensus and the need for effective action.

This balance has been further analyzed by Silvia Bacchetta in *Global Climate Justice: Theory and Practice,* through the evolution of climate treaties, from the Rio Declaration to the Paris Agreement. The Rio Declaration (1992) introduced principles of international cooperation and sustainable development, but it was the Kyoto Protocol (1997) that first attempted binding commitments. Prioritizing effectiveness, Kyoto imposed emission reduction targets on developed countries, but failed to align these commitments with national economic interests, leading to numerous withdrawals, including that of the United States in 2001 (Bacchetta, 2023, pp.68-70). To address this failure, the Copenhagen Accord (2009) marked a shift toward consensus, allowing countries to establish their own nationally determined contributions (NDCs). However, its voluntary nature led to limited reductions. The Paris Agreement (2015) represents a hybrid approach, combining the flexibility of NDCs with binding procedural mechanisms such as transparency and periodic review. It also raised global ambition, aiming to limit warming below 2°C and ideally to 1.5°C. However, its greatest weakness lies in the absence of sanctions: the Paris regime relies on political will and peer pressure (Bacchetta, 2023, pp. 70-73).

Ultimately, climate change is not only about CO_2 or temperatures. It is a question of justice, history, knowledge, and power. Addressing climate change requires the integration of science and ethics, diplomacy and activism, philosophy and politics. A fair and effective response must tackle not only the physical causes of climate change, but also the socio-political structures that shape vulnerability.

As the planet warms, the imperative is not just to reduce emissions, but to transform our systems, values, and narratives toward a more just and sustainable future.

1.3 Institutional Foundations of Climate Justice

As previously stated, at the heart of addressing the climate crisis lie questions of historical accountability, moral responsibility, and economic inequality. It is therefore compulsory, to construct institutions that not only reduce emissions but also distribute responsibilities and burdens fairly across nations and generations.

Adopted in 1992, the UNFCCC (United Nations Framework Convention on Climate Change) is the cornerstone of international climate law and one of the earliest documents to institutionalize the concept of climate justice. Its foundational principle of "common but differentiated responsibilities and respective capabilities" (CBDR-RC) reflects a commitment to both historical accountability and equitable burden-sharing. Article 3 of the Convention codifies, among its five principles, the responsibility of developed countries to lead climate action, recognizing their disproportionate contribution to global emissions and their greater financial and technological capacity to address the problem. In doing so, the UNFCCC embeds the notion of historical responsibility directly into the institutional fabric of climate governance.

Crucially, the Convention balances environmental protection with sustainable development, particularly for the Global South. Article 4.7 affirms that poverty eradication and economic development are overriding priorities for developing nations, making it clear that climate policies must not exacerbate global inequalities. This ethical positioning reinforces both intergenerational justice – protecting future generations from environmental harm – and intragenerational justice, by safeguarding present development needs. Furthermore, institutional mechanisms such as the Conference of the Parties (COP), and Articles 4 and 11 respectively on technological and financial support, operationalize climate justice by mandating that developed nations fund and facilitate capacity-building in less developed countries. Though non-binding and often criticized for weak enforcement, the UNFCCC remains the foundational blueprint upon which more ambitious agreements – such as the Kyoto Protocol and the Paris Agreement – have been built.

Building on the institutional legal foundation of the UNFCCC, Darrel Moellendorf (2014, pp.155-57) in *The Moral Challenge of Dangerous Climate Change: Values, Poverty, and Policy* distinguishes between outcome responsibility (accountability for past harms), remedial responsibility (the duty to repair damage), and social responsibility (the duty to construct just institutions). This last category plays a particularly important role in that it calls for forward-looking institutions that prevent further injustice rather than fixate solely on blame. Furthermore Moellendorf critiques common fairness principles like the polluter-pays

and beneficiary-pays approaches, noting that they are either retroactively unfair or impractical to apply across generations. Instead, he advocates for the ability-to-pay principle, which asserts that the costs of climate mitigation and adaptation should be distributed based on a state's developmental capacity (Moellendorf, 2014, pp. 173-177). This model aligns closely with the UNFCCC's CBDR-RC framework and offers a more morally coherent and politically viable strategy for institutionalizing global climate justice. So institutionally, this framework supports mechanisms that are both equitable and enabling: developing countries should receive financial and technological support not as aid, but as a matter of justice. Moellendorf's reasoning expands the institutional foundations of climate justice beyond legal norms to include moral obligations that shape institutional design, ensuring that climate policy is responsive to inequalities of wealth, capacity, and vulnerability.

Furthermore, Moellendorf reinforces the need for robust institutions by highlighting the temporal urgency of the climate crisis. Using King's call for the "fierce urgency of now" he demonstrates that emissions must peak and decline rapidly to stay within the 2°C warming threshold (Moellendorf, 2014, p.181).

Yet current trajectories indicate that the global carbon budget will be depleted by 2040, making institutional inaction a form of moral failure that shifts disproportionate burdens onto future generations. Moellendorf critiques overreliance on adaptation, geoengineering, and assisted migration as substitutes for mitigation, warning that they can foster a moral hazard – an institutional complacency that delays meaningful action (Moellendorf, 2014, pp. 183-185). Nonetheless, he advocates for robust institutional planning that anticipates warming beyond 2°C, particularly because the world's poorest are least capable of absorbing climate shocks. In this context, Moellendorf calls for adaptation funding mechanisms, such as the Green Climate Fund (2016), to be expanded and institutionalized with clearer guidelines and equity principles. He supports the ability-to-pay principle, insisting that poor states must not be left to finance climate resilience alone, as this would contravene the right to sustainable development (Moellendorf, 2014, pp. 186-188).

Taken together, the UNFCCC lays the legal groundwork, recognizing historical responsibility and embedding differentiated obligations while Moellendorf enriches this foundation with a normative framework that moves beyond fault to emphasize capacity, precaution, and future-oriented justice. In the face of a time-sensitive global crisis, climate justice must be built into the very architecture of global governance.

1.4 The Role of Ethics in Climate Change

It can be argued that climate change is at its core a profound ethical crisis. As a matter of fact, Both Stephen M. Gardiner in *A Perfect Moral Storm: the Ethical Tragedy of Climate Change* (2011) and John Broome in *Climate Matters: Ethics in a Warming World* (2012) make compelling cases that ethical reasoning must take center stage in any serious engagement with the climate crisis. While Gardiner emphasizes the structural conditions that compromise moral action, Broome focuses on individual and institutional obligations rooted in justice and goodness. Together, their contributions illuminate the indispensable role of ethics in navigating the complex terrain of climate change.

At the heart of Gardiner's thesis is the concept of a "perfect moral storm", which captures the convergence of three distinct but interrelated challenges: the Global Storm, the Intergenerational Storm, and the Theoretical Storm. The Global Storm arises from the spatial dispersion of causes and effects and the fragmentation of agency: greenhouse gas emissions are produced locally but have global consequences. This dynamic encourages free-riding and undermines collective action, given the absence of a centralized global authority capable of enforcing emissions reductions (Gardiner, 2011, pp. 24-32).

The Intergenerational Storm, in turn, highlights the temporal asymmetries of climate change: while the current generation benefits from fossil fuel consumption, the burdens are deferred to future generations, who have no voice in present policy decisions. Gardiner describes this as the "Pure Intergenerational Problem" (PIP), where each generation is incentivized to act selfishly, knowing that the future cannot hold them accountable (Gardiner, 2011, pp. 33-41).

The Theoretical Storm compounds the first two by exposing the limitations of our current moral and political frameworks to address long-term, probabilistic, and multi-species harms. Gardiner warns that this conceptual ambiguity fosters "moral corruption", allowing societies to obscure ethical failures behind appeals to uncertainty, economic pragmatism, or political paralysis (Gardiner, 2011, pp. 42-44).

Crucially, he argues that the failure to act is not simply due to ignorance or apathy, but is structurally facilitated by the complexity of the problem itself. This diagnosis reveals a deeper ethical challenge: the climate crisis enables moral evasion even among those who are aware of the stakes.

John Broome, approaching the issue from the intersection of economics and moral philosophy, similarly insists that the harms caused by greenhouse gas emissions are not simply environmental side effects or technical challenges to be managed, but injustices that

demand moral consideration. Each act of emitting, no matter how small, imposes costs on others by contributing to climate damages, and when these costs are uncompensated, they amount to harm (Broome, 2012, ch. 4, pp. 17-18). Broome stresses that this is true even when the victims are distant in time or place: the ripple effects of our actions extend across generations, shaping the conditions in which people live and even influencing the identities of those who will come to exist. While philosophical debates such as the non-identity problem complicate questions of responsibility to future people, Broome argues convincingly that present generations cannot evade accountability for the world they leave behind (Broome, 2012, ch. 4, pp. 17-18).

One of Broome's key interventions is his cost-benefit analysis where he draws a distinction between "efficiency without sacrifice" and "efficiency with sacrifice" that suggest that current generations borrow against future wealth to finance mitigation efforts now (Broome, 2012, ch. 3, pp. 11-13). Though not ethically perfect, this solution is politically pragmatic and potentially effective.

Broome also delineates the distinct moral labor that individuals and governments hold, highlighting an important structural feature of climate ethics: individuals and governments operate under complementary but distinct ethical demands. Individuals must not seek personal benefit at the expense of imposing harm on others, whereas governments must coordinate sacrifices and distribute burdens fairly in order to protect the common good. (Broome 2012, ch. 4 pp. 18-22).

Both Gardiner and Broome engage with intergenerational ethics, though in complementary ways. Even if our actions determine who will exist in the future, we are still accountable for the conditions they inherit. This reinforces Broome's core ethical argument: we must not cause harm, even indirectly, and even if the victims are not yet born.

Therefore, ethical reasoning is not auxiliary to climate policy; it is foundational. It helps us understand not just what ought to be done, but why we so often fail to do it.

This convergence is particularly relevant in today's context, where the effects of climate change disproportionately impact the world's most vulnerable populations. The ethical failure to address climate change is thus not only a matter of intergenerational injustice, but also one of global distributive injustice. Gardiner's storm metaphor underscores how the very structure of the crisis enables rationalizations of inaction, while Broome's moral calculus calls for immediate and equitable responses, even in the absence of perfect solutions.

In conclusion, Gardiner and Broome each illuminate the ethical terrain of climate change. Together, their works reinforce the necessity of an ethical turn in climate discourse.

Addressing climate change is not merely a matter of science or economics; it is a test of our moral capacities, both individual and collective. If we are to meet this challenge, ethics must move from the margins of debate to its very center.

1.5 Practical Application of Climate Justice in the Global Context

Now that we have established that climate change is not merely an environmental issue, it needs to be addressed that climate change is also fundamentally political, shaped by historical injustices and institutional complexity.

J. Timmons Roberts & Bradley C. Parks in *A Climate of Injustice: Global Inequality, North-South Politics, and Climate Policy* (2007) argue that global climate inaction is best understood through the lens of structural inequality, particularly the entrenched divide between the Global North and South. Their analysis shows how historical exploitation, economic dependency, and institutional marginalization foster Southern countries' skepticism toward international climate agreements. From a world-systems perspective, climate negotiations reflect a broader pattern of systemic injustice, whereas developing nations are disproportionately vulnerable to climate risks yet lack the political leverage and financial resources to influence global policy agendas.

Underdevelopment, weak institutions, and historical subjugation exacerbate the risks these countries face, limiting their adaptive capacity. Meanwhile, wealthier states have resisted binding commitments, easily leapfrogging from carbon-emitting to renewable solutions, reinforcing Southern perceptions of free-riding.

For Roberts and Parks, rebuilding trust and developing equitable pathways to reduce emissions must involve the active participation and leadership of scholars and policymakers from the Global South, ensuring that they play a central role in shaping the global climate agenda, being integral to climate governance (Roberts, Parks, 2007, p. 233).

David Schlosberg in *Climate Justice and Capabilities: a Framework for Adaptation Policy* (2012) adds another dimension to the justice debate by proposing a capabilities-based approach to climate adaptation policy. Schlosberg shifts the normative focus from distributive equity to the actual functioning of individuals. This move foregrounds the lived realities of climate impacts, particularly for marginalized groups whose capabilities are most threatened by environmental degradation. Importantly, Schlosberg also integrates the concept of recognition, arguing that justice must address not only material deprivation but also the misrecognition of certain communities in political and institutional contexts. Misrecognition – manifested through exclusion, stereotyping, or lack of voice – compounds material vulnerabilities, especially for Indigenous groups and small island nations (Schlosberg, 2012, pp. 445-459).

Additionally, by emphasizing political participation and community-sensitive adaptation strategies, Schlosberg critiques the one-size-fits-all approach of many global frameworks. He

contends that adaptation must be locally grounded, inclusive, and participatory, capable of fostering “fertile functionings” while addressing “corrosive disadvantages” (Schlosberg, 2012, p. 457).

His model offers a compelling normative framework for policy design that transcends the dominant mitigation-distribution binary in global climate discourse.

H. Bulkeley and P. Newell in *Governing Climate Change: Polycentricity in Action?"* (2018) instead extend the discussion from justice to governance architecture, arguing that climate governance has become increasingly polycentric. Polycentric governance is characterized by five interlinked propositions: local self-organization, mutual adjustment, experimentation, trust-building, and overarching rules (Bulkeley, Newell, 2018, pp. 13-20). These elements allow for dynamic, decentralized responses that can adapt to specific contexts, mitigate risks, and facilitate learning. The Paris Agreement's bottom-up model and the rise of voluntary, non-state commitments exemplify this shift (Bulkeley, Newell, 2018, p.4).

Crucially, polycentricity complements the justice-oriented approaches of Roberts, Parks, and Schlosberg by offering a governance framework that can accommodate plurality and empower local agency.

Therefore, Roberts and Parks expose the moral and political failures of the current system rooted in historical injustice. Schlosberg proposes a shift toward capabilities and recognition, centering local needs and voices, and Bulkeley and Newell provide a pragmatic model of polycentric governance that aligns with these justice goals by facilitating inclusive, decentralized, and adaptive policy responses.

Although each work emphasizes different dimensions they converge on a common insight: effective and equitable climate governance must embrace diversity, confront historical legacies, and empower marginalized voices. Only then can the international community move toward a more just and sustainable climate future

2 Historical Responsibility and Policy Shifts: Addressing Climate Inequalities on a Global Scale

2.1 Historical Responsibility and Climate Inequalities

In the ongoing effort to address the global climate crisis, two influential works continue to shape our ethical understanding of inequality and responsibility in international climate politics: Henry Shue's foundational 1999 article *Global Environment and International Inequality* and the Intergovernmental Panel on Climate Change's Sixth Assessment Synthesis Report (AR6).

Although Shue writes as a moral and political philosopher, and the IPCC reports as a body of empirical scientific consensus, these texts arising from distinct intellectual domains, arrive at a common and compelling insight. Both argue that climate change must be understood not solely as an environmental or technical challenge, but as an issue that is fundamentally ethical in nature. Shue articulates a normative framework based on three widely accepted principles of fairness which will be later discussed, whereas the AR6 report, in turn, offers a robust set of data that empirically affirms and enriches these moral arguments.

Considered together, these two contributions underscore the urgent need for a justice-oriented approach to climate governance: one that recognizes differentiated responsibilities and promotes equitable action on a global scale.

In his article *Global Environment and International Inequality*, Henry Shue explores one of the most pressing and persistent dilemmas in environmental ethics: the challenge of determining a just allocation of responsibilities among nations in addressing the harms of global environmental degradation. Rather than relying on abstract or controversial moral theories, Shue builds his argument on three widely accepted principles of fairness. These being, remedial responsibility, ability to pay, and the guarantee of a minimum. These principles, grounded in common moral intuitions, each independently point toward the same normative conclusion: that wealthier, industrialized countries ought to bear a disproportionately large share of the burden. Shue contends that this conclusion is not a matter of generosity or charity, but of justice, arising from historical responsibility, existing capacity, and the ethical imperative to

ensure that all individuals have access to a basic standard of well-being (Shue, 1999, p. 531).

The first principle, remedial responsibility, holds that those who have caused harm should bear the primary responsibility for remedying it. Shue applies this to the global scale by noting that wealthy nations, through decades of industrial activity, have emitted the majority of greenhouse gases and thereby contributed most to climate change. He emphasizes that this damage was done largely without the knowledge, consent, or participation of the global South, which now also faces the consequences. Even if current generations in the North did not directly cause the original emissions, they continue to benefit from the wealth and infrastructure those emissions made possible. As Shue explains, the intergenerational transmission of advantage implies a corresponding continuity of responsibility. Thus, historical accountability extends beyond individual actors to the institutions and systems that have enabled global inequities to persist (Shue, 1999, pp. 534-537).

The second principle is ability to pay, which states that those with greater resources should contribute more to solving shared problems. Shue critiques the notion of flat or equal contributions as inherently unjust in a world of economic inequality. A uniform policy might impose similar percentage costs on all nations, but in practice, this would be more harmful to poorer countries with fewer resources. He compares this to the regressive effect of flat taxes and calls for progressive contributions that account for wealth disparities and the relative hardship caused by different levels of contribution. Shue acknowledges that such arrangements might reduce economic “efficiency” but argues that justice cannot be sacrificed for marginal gains in productivity. This approach prioritizes moral fairness over technocratic optimization, especially in contexts involving basic human welfare and global justice (Shue, 1999, pp. 537-540).

The third principle is the guarantee of a minimum, which posits that no one should be required to sacrifice their basic needs or subsistence-level security in order to address problems largely caused by others. In a world where many people still lack reliable access to food, shelter, and clean water, Shue argues that asking the poorest nations to invest in global environmental protection without first ensuring their citizens' basic survival is not only unfair but morally indefensible. He distinguishes between luxuries and necessities, asserting that sacrifices can only be expected from those whose

fundamental needs are already met. The principle of a guaranteed minimum requires that no global cooperative scheme imposes additional hardship on the already disadvantaged. It is a matter of justice that those who have contributed least to the problem and have the least capacity to help are not burdened by obligations they cannot reasonably meet (Shue, 1999, pp. 540-544).

Together, these three principles form a coherent ethical framework for thinking about climate justice and international cooperation. According to Shue, wealthy nations should not assume greater responsibility for climate action as an act of charity, but as a matter of justice rooted in their historical role, their current capabilities, and their obligation to uphold the dignity of those most vulnerable. Importantly, Shue's framework does not rest on a single moral theory, but rather on widely shared intuitions about fairness, accountability, and the right to a minimally decent life. His work remains a foundational contribution to discussions of climate equity and global responsibility.

Converging conceptually, the Intergovernmental Panel on Climate Change's Sixth Assessment Synthesis Report (AR6) offers not only an authoritative synthesis of contemporary scientific understanding of the climate crisis, but also a compelling contribution to ongoing discourse on climate ethics, particularly concerning historical responsibility and global inequality. While the report does not adopt explicit normative positions, its detailed empirical findings lend significant support to long-standing moral arguments about fairness, accountability, and differentiated obligations in addressing climate change. It thus operates at the intersection of science and justice, reinforcing the ethical imperatives that underpin international climate policy frameworks.

One of the central contributions of the AR6 report lies in its rigorous documentation of cumulative greenhouse gas (GHG) emissions, which offers empirical validation of historical responsibility. Between 1850 and 2019, industrialized countries in North America and Europe were responsible for the majority of global emissions, accounting together for nearly 40% of cumulative CO_2 outputs from fossil fuel combustion and land-use change. By contrast, Africa and Southern Asia, regions currently among the most climate-vulnerable, contributed only 4% and 7% respectively (IPCC, 2023, pp. 45-46). This quantification of responsibility provides a factual basis for the normative claim that those who have historically contributed the most to climate

degradation should also bear a greater share of the costs associated with mitigation and adaptation.

This historical imbalance is especially significant when interpreted through the lens of the principle of "common but differentiated responsibilities," a foundational idea in climate justice discourse. It affirms that responsibility should not be shared equally, but equitably – reflecting past actions, current capacities, and future risks. The IPCC's data reinforce the moral logic that mitigation responsibilities must be proportionate to each nation's historical footprint, an argument articulated by theorists like Henry Shue, who stresses that justice demands those who benefited most from unsustainable practices lead the response to their consequences.

The AR6 report also draws attention to vast disparities in current emissions and economic capacity. In 2019, per capita GHG emissions ranged from 2.6 tCO_2-eq in Southern Asia to 19 tCO_2-eq in North America. Even among countries at similar income levels, emissions vary significantly due to differences in energy intensity, urban infrastructure, and consumption habits. Particularly concerning are Least Developed Countries (LDCs) and Small Island Developing States (SIDS), which have among the lowest per capita emissions (1.7 and 4.6 tCO_2-eq respectively) yet face the most severe constraints in implementing climate action (IPCC, 2023, p. 44). These figures expose a morally charged asymmetry: those who contributed least to the problem are often most affected by it, and least equipped to respond.

This structural inequality is not limited to emissions alone but is compounded by differences in vulnerability. The AR6 estimates that between 3.3 and 3.6 billion people live in contexts highly exposed to climate hazards. Climate-related mortality is up to fifteen times higher in these areas than in less vulnerable regions (IPCC, 2023, p. 51). These conditions are not merely the result of geography or exposure to natural risks, but are profoundly linked to systemic factors such as poverty, gender inequality, limited governance capacity, and the enduring effects of colonialism. By identifying these social determinants of vulnerability, the IPCC report reinforces the notion that climate injustice is deeply embedded in historical and political structures.

The AR6 further distinguishes between urban and rural vulnerability, noting that both contexts present distinct yet severe risks. In urban settings, especially in the Global South, rapid population growth and weak infrastructure result in informal settlements

that are highly exposed to flooding, heatwaves, and disease. In rural areas, communities dependent on agriculture, fisheries, and other climate-sensitive livelihoods are at increasing risk due to water scarcity, soil degradation, and biodiversity loss (IPCC, 2023, pp. 48-50). The report also acknowledges that even within countries that appear less vulnerable at the national level, marginalized sub-populations may face acute exposure and limited adaptive capacity. This complexity underscores the importance of multidimensional vulnerability assessments that capture disparities both between and within nations.

Importantly, the AR6 includes a striking graphical synthesis that juxtaposes per capita emissions with vulnerability scores. This visual illustrates that some of the world's most climate-vulnerable regions, such as Sub-Saharan Africa and South Asia, also rank among the lowest in emissions. The implication is ethically potent: countries that have emitted the least are enduring the gravest consequences. This finding supports calls for international mechanisms that address loss and damage, facilitate technology transfers, and provide equitable climate finance. It affirms the demand that mitigation and adaptation strategies be tailored not only to national emissions profiles but also to social, economic, and historical contexts.

Moreover, the report critiques the structure of global economic activity, highlighting how emissions are not only unevenly distributed between countries, but also within them. The top 10% of households globally are responsible for 34–45% of consumption-based GHG emissions, while the bottom 50% account for just 13–15% (IPCC, 2023, p. 44). These figures challenge state-centric allocations of responsibility and invite a more nuanced understanding of class-based inequality. They resonate with Shue's emphasis on the "ability to pay", whereby those with greater wealth and fewer immediate vulnerabilities have a moral obligation to bear a larger portion of climate action costs, both within and across national boundaries.

Perhaps one of the most significant contributions of the AR6 report is its insistence that inequality is not a peripheral concern, but central to effective climate governance. The report emphasizes that responses to climate change are more likely to succeed if they are perceived as fair. Justice, in this context, is not only an ethical imperative, it is a practical necessity. Policies that ignore equity risk resistance, social unrest, and political failure, whereas justice-based approaches can facilitate both

inclusivity and broad participation, which in turn could guarantee deeper societal interests in climate action and the establishment of social trust, ensuring an equitable sharing of benefits and burdens (IPCC, 2023, p. 101).

In conclusion, the IPCC AR6 Synthesis Report offers a scientifically rigorous and ethically resonant account of global climate inequality. By documenting historical emissions, exposing structural vulnerability, and highlighting systemic disparities in capacity and impact, it contributes a powerful voice to the broader discourse on climate justice. Its findings lend support to normative claims for differentiated responsibilities and elevate the role of fairness in shaping international climate agreements. In doing so, it reinforces the notion that meaningful climate action must go beyond carbon metrics and efficiency goals to embrace a deeper commitment to historical accountability, global solidarity, and the protection of those most at risk.

2.2 Changes in Global Climate Policies

Understanding the evolving architecture of global climate governance requires both an appreciation of its legal foundations and a critical engagement with its contemporary trajectories. The 1992 United Nations Framework Convention on Climate Change (UNFCCC) marked a turning point in international environmental law, embedding the principle of common but differentiated responsibilities (CBDR) and emphasizing equity, historical accountability, and sustainable development. However, as global mitigation strategies have shifted toward technologically ambitious approaches, such as negative emissions technologies (NETs), new ethical, political, and ecological concerns have emerged. In their article *Land-based Negative Emissions: Risks for Climate Mitigation and Impacts on Sustainable Development (2018)*, Kate Dooley and Sivan Kartha examine these emerging strategies, warning that the reliance on land-based NETs may undermine the very justice principles enshrined in the UNFCCC. Together, these texts chart the normative and empirical tensions shaping current climate policy, revealing a persistent dilemma between deferring responsibility through speculative solutions and implementing equitable, near-term action.

The 1992 UNFCCC represents a landmark in the evolution of international environmental law and global climate governance. Emerging from the Rio Earth Summit, the Convention laid the groundwork for coordinated international efforts to address anthropogenic climate change. Its central objective is to stabilize greenhouse gas concentrations "at a level that would prevent dangerous anthropogenic interference with the climate system", while ensuring that such stabilization occurs within a timeframe that allows ecosystems to adapt naturally and economies to grow sustainably (UNFCCC, 1992, Art. 2).

At its core, the Convention introduces the principle of common but differentiated responsibilities and respective capabilities (CBDR-RC). This principle affirms that all nations share the responsibility to address climate change but recognizes that not all have contributed equally to the problem or possess the same capacity to respond. The Convention explicitly acknowledges that "the largest share of historical and current global emissions of greenhouse gases has originated in developed countries", and further observes that the "per capita emissions in developing countries are still relatively low" (UNFCCC, 1992, Preamble). This acknowledgement underpins the expectation

that industrialized nations, referred to as Annex I countries, “take the lead” in reducing emissions and providing financial and technological support to less developed nations (UNFCCC, 1992, Art. 3.1, Art. 4.2-4.5).

Beyond CBDR-RC, the Convention articulates several other normative pillars that have influenced subsequent treaties and negotiations. It embraces the precautionary principle, urging Parties not to postpone mitigation on grounds of scientific uncertainty (UNFCCC, 1992, Art. 3.3), and it emphasizes intergenerational equity, asserting the need to safeguard the planet for present and future generations. Additionally, the Convention embeds the concept of sustainable development, recognizing that environmental protection and economic development are not only compatible but mutually reinforcing (UNFCCC, 1992, Art. 3.4).

Institutionally, the UNFCCC establishes the Conference of the Parties (COP) as its highest decision-making body, responsible for reviewing implementation, setting new commitments, and facilitating further cooperation. The COPs have served as critical venues for global climate diplomacy, enabling the adoption of major protocols such as the Kyoto Protocol (1997) and the Paris Agreement (2015). The Convention also mandates the creation of financial and technical assistance mechanisms. Annex II countries, in particular, are required to provide “new and additional financial resources” and facilitate the transfer of environmentally sound technologies to developing nations (UNFCCC, 1992, Art. 4.3. - Art.5).

In terms of global climate policy evolution, the UNFCCC has had a lasting impact by institutionalizing equity as a foundational element of climate governance. Its emphasis on differentiated obligations legitimized and sustained international calls for climate finance, capacity building, and technology transfers. These mechanisms are not merely auxiliary; they are essential to enabling developing countries to contribute to climate mitigation and adaptation without compromising their development goals.

Moreover, the Convention’s recognition of historical responsibility has paved the way for climate justice discourses. While the text itself is cautious in legal terms, its preamble and principles have been interpreted, and increasingly invoked, by scholars, negotiators, and activists to demand reparative frameworks for loss and damage, particularly for nations that have contributed the least to climate change but face its worst impacts. In contemporary policy discussions, including debates over carbon

budgets, negative emissions, and net-zero pathways, the UNFCCC's ethical architecture remains highly relevant.

In conclusion, the UNFCCC is not simply a legal framework but a normative document that redefined the terms of international climate cooperation. By embedding equity, responsibility, and development into climate governance, it laid the foundation for future negotiations while creating enduring tensions over implementation and fairness. As global climate policies evolve to address new technological and geopolitical realities, the foundational principles of the UNFCCC continue to shape the contours of what just and effective climate action must entail.

In keeping with a similar perspective, the article *Land-based Negative Emissions: Risks for Climate Mitigation and Impacts on Sustainable Development (2018)* by Kate Dooley and Sivan Kartha critically assesses the emerging reliance on land-based negative emissions technologies (NETs) in climate mitigation strategies, especially those aimed at achieving the 1.5°C target set by the Paris Agreement. The authors argue that modelled pathways incorporating vast amounts of NETs, particularly bioenergy with carbon capture and storage (BECCS) and large-scale reforestation, entail profound social, ecological, and governance risks (Dooley, Kartha, 2018, pp. 83-86). The paper's contribution is not merely technical but deeply political and ethical, warning against the hazards of over-relying on speculative technologies at the expense of immediate, equitable emission reductions. More specifically, there is a perspective known as the techno-fix perspective that assumes that technological progress alone can resolve the ecological and social crises associated with climate change. This view rests on an almost salvific faith in innovation, where new tools and systems are seen as inherently capable of delivering solutions regardless of the wider context. A more critical approach, however, shows the limitations of this optimism. Technologies are never neutral: they emerge from particular cultural, political, and economic settings, and in turn shape the societies that adopt them. Reducing them to simple instruments or assuming they unfold according to deterministic laws strips away the complexity of their role. Instead, technologies should be understood as part of socio-technical systems whose effects depend on values, governance, and human choices. From this perspective, meaningful responses to climate challenges cannot rely on blind trust in future inventions but must embed ethical reflection, democratic deliberation, and sensitivity to

social consequences into the design and implementation of technology itself (S. Umbrello, Technology Ethics, Polity 2024).

Dooley and Kartha introduce a comprehensive risk evaluation framework for land-based NETs. This framework classifies risks into three categories: technical and biophysical infeasibility, unacceptable social and ecological impacts, and ineffectiveness due to reversal risks or insufficient carbon removal (Dooley, Kartha, 2018, pp. 83-84).

The first risk questions whether the technologies (especially BECCS) will ever become viable at scale, given unresolved challenges around biomass supply, infrastructure, and carbon permanence. Despite being heavily featured in integrated assessment models (IAMs), BECCS remains largely untested at the scale envisioned, with current technological readiness falling far short of what 1.5°C pathways would require (Dooley, Kartha, 2018, p. 83, p. 94).

The second risk category concerns land competition. Dooley and Kartha stress that extensive deployment of NETs could displace land needed for food production, biodiversity, and indigenous livelihoods. For example, estimates of land needed for BECCS range up to 3000 million hectares which coincides with nearly twice the world's currently cultivated land (Dooley, Kartha, 2018, p. 84). This would compromise the Sustainable Development Goals (SDGs), particularly those related to hunger (SDG 2), climate action (SDG 13), and life on land (SDG 15) (Dooley, Kartha, 2018, pp. 86-88). Even options considered more sustainable, such as forest ecosystem restoration, are constrained by existing land uses and socio-economic limitations.

The third risk revolves around the potential ineffectiveness of NETs. Carbon sequestered in biological sinks is inherently vulnerable to natural disturbances like fires, droughts, and pests, as well as human-driven land-use change (Dooley, Kartha, 2018, p. 85). Consequently, assuming that carbon removed today will remain sequestered for the long term is a precarious gamble. Moreover, if societies delay stringent emissions cuts now in reliance on future NETs, and those technologies fail to deliver, the consequences could be catastrophic resulting in irreversible climate change impacts and missed mitigation windows (Dooley, Kartha, 2018, pp. 85-86).

Dooley and Kartha argue that such techno-optimistic scenarios mask deeper ethical and governance challenges. Current policy pathways, shaped by IAMs, often portray NETs

as a “deferred cost” solution. This logic allows policymakers to avoid politically difficult decisions in the short term, while presupposing that future generations will bear the technological and ecological burden of removing today’s emissions. The authors challenge this logic on the grounds of intergenerational equity and democratic legitimacy. They argue that the decision to rely on NETs is not merely scientific or economic, but profoundly normative and therefore must be subject to democratic deliberation rather than technocratic modeling (Dooley, Kartha, 2018, p. 86).

Importantly, the paper highlights more viable and sustainable alternatives, such as avoiding deforestation, ecosystem restoration, and reforestation that aligns with community-led, biodiversity-friendly practices. These options, though less ambitious in terms of carbon removal, offer co-benefits for resilience, food security, and indigenous rights. Dooley and Kartha estimate that such “sustainable NETs” could achieve up to 480 Gt CO_2 in carbon removal, provided they are implemented with strict governance and safeguards (Dooley, Kartha, 2018, pp. 93-94).

In terms of global climate policy, the article resonates strongly with ongoing debates over equity and ambition in the post-Paris Agreement era. Indeed, the authors align with the Paris Agreement’s explicit framing that climate goals must be achieved “in the context of sustainable development and efforts to eradicate poverty” (IPCC, 2018, ch. 5, p. 479) (Dooley, Kartha, 2018, p. 94). Their analysis shows that pathways consistent with these principles must prioritize immediate emission reductions, protect critical land uses, and embed mitigation strategies in social justice frameworks. In doing so, the article calls into question the current orthodoxy of deferring ambition through hypothetical future solutions.

Ultimately, Dooley and Kartha’s work pushes the climate community to rethink assumptions underpinning long-term mitigation planning. It provides policymakers, scholars, and activists with a critical tool to evaluate NETs not just for their technical feasibility, but for their alignment with a just and sustainable transition. The authors make a compelling case that climate strategies must not gamble with unproven technologies at the cost of ecological integrity and human rights. Instead, climate governance should focus on transparent, inclusive decision-making processes that acknowledge and navigate the trade-offs inherent in land-based carbon removal strategies.

3 Equity in Climate Justice: Distributive, Intergenerational, and Practical Challenges

3.1 Distributive Justice and Climate Inequalities

Climate change is not only a scientific and technical problem but also a profound issue of justice. The global nature of the crisis raises difficult questions about who should bear the costs of mitigation and adaptation, how responsibilities should be distributed, and what principles ought to guide international cooperation. Chukwumerije Okereke's article, *Global Environmental Sustainability: Intragenerational Equity and Conceptions of Justice in Multilateral Environmental Regimes* (2005), provides a valuable framework for analysing these questions. By examining the justice discourses embedded in multilateral environmental regimes – especially the United Nations Framework Convention on Climate Change (UNFCCC) – Okereke highlights the centrality of global justice principles to climate governance, while also exposing the ways in which neoliberal priorities limit their practical realisation.

Okereke argues that debates on sustainability and climate governance cannot be separated from broader struggles for justice. Environmental degradation often reproduces global inequalities, with those least responsible for pollution suffering the greatest harms (Okereke, 2005, pp. 726-727). This pattern is evident in climate change: industrialised nations have historically emitted the majority of greenhouse gases, yet it is developing countries that face the gravest risks and have the least capacity to adapt. Consequently, the justice question is unavoidable in climate negotiations.

The UNFCCC explicitly embeds justice in its founding principles. Article 3 commits states to act "on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities" (UNFCCC, 1992, Art.3) (Okereke, 2005, p.733). This principle of common but differentiated responsibility (CBDR) is perhaps the most explicit articulation of distributive justice in global climate governance. It recognises both unequal historical contributions and different present capacities, demanding that developed states take the lead in emissions reductions while assisting developing countries financially and technologically.

Another important justice discourse is the one regarding the principle of per capita emissions rights. Proposals for allocating emissions allowances on the basis of population size rest on the egalitarian assumption that each person has an equal

entitlement to the atmospheric commons. While such proposals were never adopted as binding rules, their discussion in UNFCCC negotiations marked a normative shift toward a more egalitarian vision of justice in global climate governance (Okereke, 2005, pp. 733–734).

A further pillar of justice in climate politics is the notion of historical responsibility. Developing countries have argued consistently that industrialised nations owe a "climate debt" because of their long-standing exploitation of the atmospheric commons. As Okereke notes, the recognition of historical emissions as a basis for responsibility is an essential part of fairness in climate governance. Without such recognition, the burden of addressing climate change would fall disproportionately on poorer states (Okereke, 2005, p.733), undermining both equity and sustainability.

This idea references intragenerational equity, the idea that fairness must extend not only across generations but also within the present one. The South has insisted that any effective climate regime must address the immediate distributive injustices between North and South. Yet, as Okereke demonstrates, the neoliberal orientation of global governance has meant that these claims are often reduced to procedural commitments and market instruments (Okereke, 2005, pp. 734-735), rather than substantive redistributive action.

Despite the rhetorical advances made by Southern states, Okereke shows that neoliberal justice conceptions dominate the operational rules of climate governance. The Kyoto Protocol, for example, placed heavy emphasis on market mechanisms, however, though these tools are justified in terms of cost-effectiveness and efficiency, they dismiss deeper distributive concerns and leave structural inequalities largely untouched (Okereke, 2005, pp. 733-734).

Financial transfers promised under the climate regime have also fallen far short of the scale required. While developing countries argued for significant compensation to reflect historical responsibility, the actual commitments made by the North were minimal, amounting to only a fraction of the estimated needs. This gap between normative principles and material outcomes illustrates the tension at the heart of climate governance: the discourse of equity is present, but its practical expression is limited by neoliberal logics that privilege market efficiency and minimal state intervention.

Okereke interprets the justice discourse advanced by the Global South as a counter-hegemonic project. By insisting on principles such as CBDR, per capita rights, and historical responsibility, developing countries have sought to reshape the normative framework of climate governance in ways that acknowledge global inequalities. While these efforts have not always translated into binding commitments, they have kept the language of justice alive within international agreements. As Okereke concludes, the climate regime embodies a contradictory dialectic: it recognises equity in principle but constrains it in practice through neoliberal governance structures.

Okereke's analysis demonstrates that global justice principles are not peripheral to climate governance – they are foundational. The UNFCCC negotiations reveal how concepts such as equity, historical responsibility, and intragenerational fairness are central to structuring debates over burden-sharing. At the same time, the neoliberal orientation of global governance severely limits the translation of these principles into meaningful policy outcomes (Okereke, 2005, pp.733-735). The result is a persistent gap between the normative aspirations of justice and the practical mechanisms of climate governance. Nevertheless, the continued presence of justice discourse in climate treaties suggests that equity remains a non-negotiable dimension of global climate politics.

3.2 Intergenerational Justice and Future Rights

The accelerating crises of climate change and ecological degradation raise profound questions about justice across time. What do the living owe to those who come after them? Contemporary debates increasingly frame these questions within the language of human rights and intergenerational justice. Richard P. Hiskes in *The Human Right to a Green Future* (2009) explores different but complementary dimensions of this challenge. He argues that extending justice to future generations requires reconceptualising rights as group-based, grounding obligations in a form of reflexive reciprocity, and embedding these principles within a global consensus that bridges the local and universal. This section analyses how these arguments converge on the claim that environmental human rights offer the most coherent framework for safeguarding future generations.

The starting point is the difficulty of applying traditional justice frameworks to relations between present and future generations. Classical theorists such as Hume and later Rawls argued that justice depends on reciprocity among contemporaries, meaning it cannot extend to those who do not yet exist. As Terence Ball put it, obligations to the unborn are "spurious" because they cannot participate in reciprocal exchanges (Hiskes, 2009, p. 9). Rawls's own "just saving principle" relies not on strict justice but on motivational assumptions about our sentiments of care for successors (Hiskes, 2009, p. 12). Against this skepticism, proponents of environmental human rights argue that the conditions of justice can indeed extend across time, since environmental goods are collective, emergent, and intrinsically shared between generations (Hiskes, 2009, p. 10). Thus, by reframing rights to clean air, water, and soil as foundational to all other rights, we create a baseline for intergenerational justice that avoids reducing obligations to mere charity.

Yet this shift demands a reconceptualisation of the very idea of rights. The difficulty lies in the fact that rights are usually attached to individuals, whereas future generations can only be conceived as groups. As Hiskes observes, "[...] it is impossible to view the environmental rights of future generations as anything other than group rights [...]" (Hiskes, 2009, p. 9). This raises familiar controversies in human rights theory, since group rights have often been dismissed as less "real" than individual rights. Nevertheless, in the environmental context, group rights become indispensable.

They allow us to acknowledge that future generations, though abstract, are legitimate claimants to the environmental conditions necessary for life. This recognition aligns with earlier efforts by Edith Brown Weiss, who proposed "planetary rights" as a framework for intergenerational obligations (Hiskes, 2009, p. 7).

The argument is further deepened by the introduction of the concept of reflexive reciprocity. Traditional reciprocity, defined in contractual terms by Buchanan as "tit for tat," excludes the unborn because they cannot return benefits. However, reflexive reciprocity suggests that by protecting the environmental rights of future generations, we simultaneously strengthen our own. In other words, obligations to the future rebound back to the present, enhancing our rights to a healthy environment (Hiskes, 2009, pp. 49-50). This form of reciprocity reframes justice as a mutual project across time: present actors gain by ensuring the continuity of ecological systems that sustain both them and their descendants. It also avoids the harsh exclusionary implications of Buchanan, whose framework would deny rights to children, the disabled, or any non-contributors to the "cooperative surplus" (Hiskes, 2009, p. 52). Reflexive reciprocity therefore grounds intergenerational justice not in speculative altruism but in a logic of mutual advantage that extends beyond contemporaries.

Additionally, Hiskes ulteriorly shifts the scope from philosophical justification to political application, questioning how environmental human rights might form the basis for a global consensus. He argues that globalization creates both opportunities and risks: while human rights discourse has gone global, it has also been localized, while adapted to diverse cultural contexts. Environmental human rights occupy a unique position within this dialectic because they are simultaneously local and global. Communities defend their immediate environments, but in doing so, they contribute to global ecological stability. This paradox suggests that environmental human rights could serve as a bridge between universal principles and cultural particularism. For example, just as nations issue apologies for past injustices to acknowledge historical responsibility, so too can they accept obligations to future generations in a "pay it forward" dynamic of justice (Hiskes, 2009, p. 94).

Furthermore, respecting environmental human rights of future generations parallels the widely recognized right of self-determination for states. Hiskes contends that "[...] controlling environmental effects of all kinds is essentially what

self-determination [...] means [...]" in an interdependent world (Hiskes, 2009, p. 94). By embedding intergenerational obligations within such widely accepted frameworks, the prospects for a global consensus improve. However, the challenge remains acute: as demonstrated by the U.S. withdrawal from the Kyoto Protocol, political disputes over differential obligations can undermine cooperative action (Hiskes, 2009, p. 93). This underscores the need for environmental human rights to be institutionalized in ways that balance cultural specificity with global urgency.

Taken together, these arguments display Hiskes' dexterous ability in constructing a compelling case for reframing climate justice as intergenerational environmental justice rooted in human rights. Hiskes firstly established the theoretical necessity of treating environmental rights as group rights belonging to future generations, despite longstanding skepticism about their coherence. Secondly, he introduces reflexive reciprocity as a mechanism by which obligations to the future reinforce the rights of the present, thereby grounding justice in mutual advantage rather than charity. Thirdly, Hiskes broadens the analysis to the global level, arguing that environmental human rights can mediate between universalist and particularist claims, laying the groundwork for international consensus. Although significant political and philosophical challenges still remain, the convergence of these arguments highlights the moral imperative to treat environmental human rights as the foundation of obligations across time. Ultimately, safeguarding the conditions of life for future generations is not only a matter of justice for them but also a means of securing dignity and survival for ourselves.

3.3 Critiques and Challenges in the Application of Climate Justice

The debate on climate change justice has often centred on the principles of equity and responsibility, with many scholars and policymakers contending that wealthy and historically high-emitting nations bear a special obligation to lead mitigation efforts. Yet, in *Climate Change Justice*, Posner and Sunstein (2007) challenge this orthodoxy by critically examining the distributive and corrective justice arguments that underpin such claims. They argue that while climate change undoubtedly creates global risks, the mechanisms commonly proposed to achieve justice are neither efficient nor normatively convincing. Their analysis exposes deep problems in applying theories of justice to international climate governance, raising doubts about the feasibility of achieving a climate justice framework that is both fair and practically effective.

A central strand of climate justice reasoning is distributive: wealthy nations should shoulder greater burdens because poorer nations face the gravest risks. However, Posner and Sunstein contend that greenhouse gas reductions are an extraordinarily crude method of redistribution (Posner, Sustein, 2007, p. 4). Unlike targeted aid, climate mitigation distributes costs and benefits unevenly, often harming the very poor it is supposed to help. For instance, emission reductions raise energy prices, disproportionately affecting vulnerable households in both rich and poor countries. The authors suggest that if the true aim is redistribution, direct cash transfers or targeted development assistance would be far more effective than global emission cuts. This reasoning casts doubt on the feasibility of distributive justice as a guiding principle for climate governance, since the chosen policy tools do not align with the intended normative goals (Posner, Sustein, 2007, pp. 17–18).

Equally contested is the corrective justice claim that the United States and other industrialised nations owe compensation because their past emissions created the current stock of greenhouse gases. Posner and Sunstein acknowledge the intuitive appeal of this argument but demonstrate its conceptual weaknesses. First, they highlight the aggregation problem: nations are not moral agents, and attributing responsibility to collectives obscures the roles of individuals. Second, the wrongdoer identity problem complicates matters, since much of the damage stems from emissions by people long dead, who cannot be held accountable. Imposing costs on present generations for the actions of past ones is problematic unless it can be shown that the present directly

benefits from past wrongdoing, a claim that is far from straightforward. By dismantling the corrective justice rationale, the authors argue that the feasibility of climate justice cannot rest on historical responsibility alone. (Posner, Sunstein, 2007, pp.21-23)

Beyond philosophical critiques, Posner and Sunstein emphasise the misalignment between global welfare and national self-interest. They note that the United States, given its high per capita emissions but relatively low vulnerability to climate change impacts, might be a net loser from agreements optimal at the global level. In such a scenario, expecting the U.S. to bear disproportionate costs purely out of justice considerations seems unrealistic. They propose instead that meaningful agreements may require side payments or compensatory mechanisms to induce reluctant nations to participate. Yet, as the authors observe, such solutions are politically unappetizing: it seems counterintuitive to compensate wealthy nations for reducing emissions when poorer ones bear the greatest risks. This paradox highlights the practical difficulty of embedding justice claims into workable climate agreements (Posner, Sustein, 2007 pp. 2-4).

To clarify their critique, the authors deploy the asteroid analogy, imagining a future threat that disproportionately harms poor nations. They argue that while distributive justice might suggest wealthy countries should pay more, tying redistribution to asteroid defence (or climate mitigation) is irrational compared to direct poverty alleviation (Posner, Sustein, 2007, pp. 15–17). Moreover, they stress that climate policies often benefit future rather than present poor people, raising questions about whether scarce resources should prioritise current global poverty over intergenerational concerns. This analogy sharpens their point that climate justice, as typically conceived, conflates distinct normative issues – poverty alleviation, responsibility, and risk reduction – into an incoherent framework.

Climate Change Justice ultimately offers a sobering critique of the feasibility of climate justice. By dissecting both distributive and corrective justice arguments, Posner and Sunstein reveal the conceptual and practical obstacles to embedding equity into international climate policy. Their analysis demonstrates that emission reductions are an inefficient tool for redistribution, and that historical responsibility claims falter under closer scrutiny. Moreover, the mismatch between global welfare and national self-interest complicates the prospects for just agreements. While the authors stop short

of rejecting climate cooperation altogether, they caution against assuming that justice-based arguments can provide a stable foundation for climate governance. Instead, they urge a more pragmatic approach, recognising the limits of moral theory when applied to complex international problems. In this sense, their work challenges the climate justice discourse to rethink not only its normative premises but also its political feasibility.

Conclusion

4.1 Individual Analysis

The research undertaken in this thesis highlights the complex and often contradictory role of climate justice within global climate governance. What emerges most strongly is the persistent gap between normative commitments to equity and responsibility, and the practical mechanisms through which climate policy is currently pursued. While climate justice is frequently invoked in international negotiations and academic debates, its operationalisation remains constrained by political and economic structures that prioritise efficiency and growth over distributive fairness and accountability.

This analysis suggests that climate justice should not be viewed as a fully developed policy framework but rather as a critical lens through which to assess the adequacy of proposed responses to climate change. Its primary value lies in its capacity to raise questions about responsibility, fairness, and the distribution of burdens, even when these questions are politically inconvenient. By framing climate governance in terms of justice, the concept ensures that the ethical stakes of the climate crisis remain visible, rather than being subsumed under technical or market-based considerations.

A further insight arising from this study is that climate justice cannot be reduced to narrow distributive terms. Addressing climate change in a just manner also requires attention to recognition, participation, and intergenerational responsibility. The inclusion of these dimensions broadens the scope of climate justice beyond simple cost–benefit calculations, directing attention to structural inequalities and the rights of those most affected by environmental change. Such a multidimensional approach strengthens the relevance of the concept, ensuring that it engages with both present and future challenges.

In conclusion, the analysis indicates that climate justice is both contested and indispensable. It is contested in that its principles are difficult to translate into enforceable obligations, but indispensable because it keeps fundamental ethical considerations at the center of global climate debates. The future of climate justice will therefore depend less on achieving universal consensus around a single definition and more on its continued role as a normative benchmark against which climate policies and institutions can be judged.

4.2 Projected Outcomes and Future Trajectory of Climate Justice

The concept of a just transition has become central to debates on climate policy, linking decarbonisation strategies to broader questions of equity, labour rights, and social inclusion. In *The Political Economy of the 'Just Transition'*, Newell and Mulvaney (2013) trace the evolution of this discourse and critically assess its potential role in shaping future climate governance. While the idea of the just transition originated in trade union struggles for labour protections in the shift away from polluting industries, it has since broadened to encompass issues of distributive justice, global inequality, and systemic transformation. By situating just transition within political economy frameworks, the authors argue that its future will depend on how effectively it can bridge tensions between competing interests, scales of governance, and visions of development.

A key way the article highlights the future of just transition is by stressing its role as a mediating principle between social justice and environmental imperatives. As Newell and Mulvaney explain, just transition has been increasingly framed as a means to ensure that the costs and benefits of decarbonisation are distributed fairly, particularly for vulnerable workers and communities (Newell, Mulvaney, 2013, p. 133). This framing suggests that in the future, climate policy cannot be seen as a purely technical or environmental issue; rather, it must integrate mechanisms to protect livelihoods and foster inclusive growth.

The authors also highlight the expansion of the just transition agenda beyond labour concerns to encompass developmental and global justice dimensions. In international climate negotiations, the just transition has been invoked by developing countries to argue for equitable access to finance and technology. As they note, the principle has been woven into debates on the Greenhouse Development Rights (GDR) frame-work, with the aim of significantly reducing greenhouse gas emissions. This signals that the future of just transition will involve not only compensation for workers in carbon-intensive sectors but that it will also address sensitive questions about historical responsibility (Newell, Mulvaney, 2013, p. 137).

Another critical theme in the article is the political contestation surrounding just transition. Newell and Mulvaney argue that its future will be shaped by how effectively it can resist co-optation by narrow, market-based approaches to climate policy, since

such mechanisms can reproduce injustice and negatively affect the livelihoods of poorer communities in the global South (Newell, Mulvaney, 2013, p. 137). For instance, if just transition is reduced to a rhetorical device without addressing substantive redistribution, it risks entrenching inequality rather than advancing justice. The authors stress the importance of situating just transition within broader struggles over energy and climate justice, noting that without attention to these dimensions, the burdens of a low-carbon transition will be distributed unevenly (Newell, Mulvaney, 2013, pp. 137–138). Finally, the article underscores the opportunity and urgency that the just transition presents for climate policy going forward. They show how NGOs, trade unions, and indigenous peoples' movements have mobilised transnationally to demand procedural and distributional justice in energy transitions, suggesting that just transition has the potential to align diverse constituencies in a shared project of sustainable transformation (Newell, Mulvaney, 2013, p. 139). Yet, the future trajectory of this project is uncertain: it may become a driver of systemic change, or it may be diluted into procedural commitments that fail to alter entrenched power imbalances in the global economy (Newell, Mulvaney, 2013, p. 139).

In conclusion, Newell and Mulvaney (2013) highlight the future of just transition as both promising and precarious. On the one hand, it offers a unifying framework for embedding social justice within climate governance, expanding beyond its labour origins to encompass questions of global equity and sustainable development. On the other hand, its transformative potential is threatened by risks of co-optation, institutional inertia, and the dominance of neoliberal policy approaches. The future of just transition in climate policy, therefore, will depend on whether it remains a critical, justice-oriented principle or is reduced to a rhetorical add-on to transitions. By placing just transition within the political economy of climate change, the article calls for vigilance, innovation, and coalition-building to ensure that the transition to a low-carbon world is truly just.

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