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FORUM

Every Climate Struggle is a Political Struggle: New Trends in Climate Justice[*,†]

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This article explores and evaluates recent conceptual and theoretical developments in the literature on climate justice. Initially shaped by the first generation of IPCC reports and rooted in applied ethics, early climate justice debates framed the climate crisis mainly as a mitigation issue, exacerbated by global and intergenerational collective action dilemmas, requiring ethical principles for resolution. However, with increasingly dire climate forecasts and the policy inertia of the past three decades, climate justice theories have shifted toward a political economy-centered approach. This shift reframes the issue from simply setting just emissions standards to addressing questions of productive justice within a historically situated global energy regime. The article concludes by addressing two critical challenges for production-focused climate justice theories: how to implement radical political action and how to reconceptualize our normative relationship with future generations.

Keywords: Political theory; climate change; climate justice; intergenerational justice; climate politic.

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We are living in interesting times, as the famous Chinese proverb — or rather, curse — suggests[1]. After three decades of political complacency, we now face the ominous signs of an impending climate catastrophe. The warning signs are neither subtle nor distant. The Kerala region has seen its most devastating floods in a century, displacing thousands. In the Siberian Arctic, millions of hectares of forest have melted and burned, releasing ancient methane once trapped beneath the tundra, setting off climate feedback loops that promise further disruption. Cycles of drought and heatwaves are already straining food production and public health across tropical regions (IPCC, 2023). The Amazon basin, a critical stabilizer of our planet's climate, continues to burn and shrink (LOVEJOY and NOBRE, 2019). To highlight just the most recent climate disruption in Brazil, the 2024 floods in the southern states, spurred by an almost 'permanent El Niño', have claimed over 200 lives and affected at least two million people. As the UN Secretary-General warned following unprecedent heat waves around the world, "the Earth is becoming hotter and more dangerous for everyone, everywhere" (WORLD METEOROLOGICAL ORGANIZATION, 2024)[2].

On the emissions front, the situation is even more alarming. We are rapidly nearing the critical carbon emission thresholds needed to maintain stable climate conditions. By 2023, the carbon budget for a 50% chance of limiting global warming to 1.5°C had shrunk to 250 gigatons of CO2 — equivalent to just over six years of current global emissions. For a greater than 66% probability of success, that timeframe narrows to under 'four years' of current annual emissions (RITCHIE, 2023).

Make no mistake — there are glimmers of hope. Youth movements are mobilizing around climate issues, political leaders are beginning to act with renewed urgency, and the costs of solar and wind energy have dropped significantly compared to fossil fuels. However, the challenges to meaningful climate politics remain daunting. International climate agreements have yet to effectively enforce

[1]Contrary to popular belief, substantial evidence suggests that the so-called Chinese curse —'may you live in interesting times' — is actually a colonial invention, likely fabricated by British colonialist bureaucrats.

[2]Climate change is, of course, only one of the pressing environmental issues we face. Ocean acidification (mostly due to carbon emission) and the rapid loss of biodiversity are equally critical topics for environment justice. In this review I will focus mainly on climate change.

the widespread phasing out of fossil fuels and foster cooperative strategies toward a fully decarbonized global economy. Even more concerning, we still lack viable solutions for decarbonizing critical sectors of the global economy, such as international aviation, transatlantic shipping, cement and steel production, and large-scale fertilizer manufacturing. Notably, all of these challenges, along with the fossil fuel economy itself, underpin the very foundations of our global economy and the benefits of modern life such as international trade, urbanization, continuous economic growth, and rising human development for all (DEATON, 2013; MITCHELL, 2011; POMERANZ, 2000).

I wish to draw attention to another pressing challenge in climate politics — one that is related to, but analytically distinct from, our current political and technological predicaments. How can we achieve a 'just' climate regime and ensure a 'just' energy transition that safeguards human well-being and democratic infrastructure for future generations? In this context, I will explore some key conceptual and normative issues posed by climate change, as articulated in major climate justice theories over the past decades. My main goal will be to track major theoretical shifts and highlight emerging trends in the field of climate justice. After nearly thirty years of intense academic debate, traditional conceptions of justice — by and large framed within the grammar of collective action problems, applied ethics, and political neutrality — seem to be crumbling. In their place, a new model of climate justice theorization has emerged, centered on distributive conflicts, power relations, reparative claims, and the need for a positive, compelling vision of a global energy regime for all.

Why climate justice theories?

Let me begin with some preliminary thoughts on the nature and purpose of normative climate justice theories. In general, normative theories involve an academic investigation into what we have good reasons to value from the point of view of justice, the motivations that underlie our actions, or the substantive principles of justice that should shape the normative framework of social life. Normative perspectives focus on questions about how things ought to be, rather than how they are. They are based on justification theories — intellectual

frameworks designed to produce criteria for evaluating and justifying our actions and institutions, as opposed to explanatory or interpretive theories that seek to clarify a particular phenomenon or empirical pattern. Thus, climate justice theories seek to establish criteria for justifying decisions and institutional arrangements that shape climate policies, allowing us to assess the distributive implications of the global energy regime, upon which our way of living is grounded, as well as to explore potential alternatives from a normative perspective.

Theories of climate justice stem from the recognition that the climate crisis we face is fundamentally a 'normative' problem. We can confront the consequences of climate change and choose among environmental policies based on technical or political criteria: What are the most technically efficient ways to address it? What are the most politically feasible pathways toward effective climate governance? Moreover, from a regulatory perspective, we can debate whether legal sanctions are effective tools to curb global emissions or if a cap-and-trap market of carbon emissions among nations offers a more realistic approach. What we 'cannot avoid', however, is that any action or omission regarding CO2 emissions will be potentially just or unjust from a normative perspective. As classically stated by Henry Shue, "the theme of justice will never go away [from environmental politics]. Issues of justice are inherent in the kinds of choices that must immediately be made" (SHUE, 2010a, pp. 201). No matter how much we may try to sidestep the ethical dimensions of our climate problem by focusing on technical or political solutions, the subject of justice will simply not go away (GARDINER, 2004; MOELLENDORF, 2014). To put it slightly more abstractly, we face climate challenges as moral agents, i.e., not only as causal agents responsible for intervening in the climate system, but also as 'persons' who choose to act 'for reasons'. Such reasons are subject to practices of moral accountability, meaning we must be capable of justifying our choices — what makes our actions worthwhile — and publicly communicate these justifications to other members of our moral community[3] (DARWALL, 2005; KORSGAARD, 1996).

[3]Who belongs to the moral community concerning Earth's climate? While this may seem like an unassuming question, it is extremely difficult to determine who has a moral claim on climate governance. Aside from the challenging issue of future generations, it remains unclear what stakes non-human animals hold and how we should assess the intrinsic value of biodiversity (ARMSTRONG, 2024; MOELLENDORF, 2014; PALMER, 2011; SOBER, 1986).

However, merely stating this does not resolve the issue; it is only the beginning. There is a vast and complex landscape of ethical theories and normative approaches, that could be used to support our normative judgments regarding climate policies.

However, it is important to note that we do not need to resolve intractable philosophical problems or adhere to controversial (meta)ethical theories before engaging in normative discussions. The very language of the basic regulatory framework currently in force, the United Nations Framework Convention on Climate Change (UNFCCC) signed at Rio-92, is inherently normative, institutionalized around moral-laden terms such as 'danger', 'responsibility', or 'catastrophic'. As such, it requires a foundation of normative concepts, principles, and ideals to make sense (MOELLENDORF, 2014). More to the point, normative reasoning can offer at least three relevant conceptual pieces for those engaged in the chess game of climate politics. First, and most obviously, theories of climate justice help establish the normative principles and criteria needed for ethical evaluation. Second, they also play a vital role in analyzing the normative concepts and theoretical assumptions embedded in the discourse and practices of climate negotiations.

Finally, and far less obvious, conceptions of justice can help provide the essential motivational resources needed for social transformation. If the task before us is indeed an unprecedented global energy revolution — a kind of social and political transformation unlike anything in human history — then we can be certain that purely prudential reasons for making the transition will not suffice. As Jon Elster has argued (ELSTER, 1996; ROTHSTEIN, 1998), no major social transformation in the past has ever been successfully achieved solely through the self-interested calculations of rational subjects competing for resources. One reason for this, as we shall explore later, relates to the problem of local winners and losers in globally efficient energetic strategies. There is simply no way to motivate a transition to a net-zero carbon economy running exclusively on relative gains. An equitable distribution of the burdens associated with energy transition is not only morally correct but also instrumentally strategic for anchoring the motivational foundations of stable cooperation.

An ethics of distribution

The first generation of climate justice theories[4] found its basic normative framework in applied ethics. Following the logic of what Derek Parfit famously called an "ethics of distribution" (PARFIT, 2000, p. 82), such theories tend to frame the climate crisis as an allocative problem, one that requires identifying the optimal distribution principle for scarce goods. The prototypical question then becomes how to equitably allocate greenhouse gas emissions and their climate-disrupting consequences, treating nation-states as unitary individual agents. According to the distributive model, we apply independent and pre-existing theories of justice to the emerging issue of climate change (BROOME, 2012; CANEY, 2010, 2009; McKINNON, 2022; SHUE, 2010a; SINGER 2010). Peter Singer, for instance, has compared the moral predicament of climate change with "a village in which everyone puts their wastes down in a giant sink" (SINGER, 2010,p. 187). Because village dwellers have varying waste profiles — or, conversely, consumption rates — and the absorption capacity of the sink is a finite resource, soon or later they will face a situation in which "various parties have competing claims" (SINGER, 2010, p. 188) that must be settled through shared normative standards. Who should bear the costs of the solution? Those who contributed most to the depletion, those who can currently afford it, or should the costs be divided equally? Regardless of the outcome, the normative problem here is framed as a difficult allocative decision over a scarce good. According to Singer, this matter would be better managed by technical organizations, such as "a reformed and strengthen United Nations" (SINGER, 2010, p. 198)[5].

An applied ethics of climate change can be more narrowly defined as the recognition of 01. an 'urgent' and 02. 'collective action problem' 03. 'that intersects with' other pressing political issues, such as global poverty and international migration. Allow me to expand on this perspective. First, the dynamics of climate change impose an urgent predicament upon the global economy, which must be fully

[4]Rather than focusing on the 'theorists', my emphasis will be on the theories themselves. This approach is warranted because some climate justice theorists, such as Henry Shue (2021), have made significant contributions to both waves of climate justice thought.

[5]Similarly, on the vexed topic of compensating illegitimate and rights-violating tyrannies for their carbon emissions, Singer argues that the funds "could be managed by an international authority answerable to the United Nations" (SINGER, 2010, p. 197).

decarbonized in the coming decades if we are to have any hope of meeting the climate sensitivity targets set by the IPCC. This urgency is intensified not only by the continued rise in total emissions, but also because relative levels of decarbonization are not enough to tackle the cumulative amount of CO2 'already added' to the atmosphere[6].

As suggested in Singer's account (2010), the moral logic of climate change can be summarized as a problem of collective action — or more accurately, as two simultaneous problems: a global one and an intergenerational one (GARDINER 2011, 2010). Collective action problems arise from the difficulty of ensuring mutually beneficial cooperation among self-interested agents (ESLTER, 1996). In reality, there are many different types of collective action problems, and we should be cautious not to fall into overly narrow interpretations of the concept (as noted by AXELROD, 1984 and HAMPTON, 1987). It is not entirely clear, for instance, whether we should conceive the game of cutting carbon emissions as a classic prisoner's dilemma ('I won't do it if I can get away with it'), an assurance game ('I'll do it if you do it'), or an unstable equilibrium between the two. However, they all typically share a common structure: while it is collectively rational for everyone to cooperate toward a shared outcome, it remains individually rational for each agent not to cooperate. Applied to the ethics of climate change, a stable climate system is conceived as a rival and non-excludable resource, with each party having an incentive to overexploit it at the expense of the commons. The key point here is that climate change embodies a scenario in which a truly global emission process — where the origin of CO2 emissions does not matter for the depletion of atmospheric capacity — engenders changes in 'local' climate dynamics. The impact of emissions is not confined to their source, as is typical with the standard case of pollution externalities; instead, it is dispersed across various actors and geographic regions in the form of changes in the climate system. This means that each country or region faces unique vulnerabilities and risks that differ from other nations in both the extent and type of damage. This dispersion between cause and effect makes it

[6]On the cumulative records of different regions and countries, see EKWURZEL et al. (2017) and RITCHIE, 2019.

extremely challenging to coordinate and supervise global policies for emission mitigation and environmental adaptation (OLSTROM, 2009).

Due to the lack of centralized enforcement in global politics, the attainment of just outcomes in climate policy depends heavily on mutually accepted principles of justice among states, assumed as unitary agents. As such, the paradox of collective action problems arises from the fact that, although each country has the power to decide whether to cooperate in a common climate arrangement — and generalized cooperation is the best outcome for everyone — most nations ultimately choose defection as their optimal response to the situation.

However, this represents only the first type of collective action predicament — the 'global problem'. We also encounter another source of collective action problem: the climate crisis is fundamentally an 'intergenerational problem'. The dispersion between cause and effect must also be considered from an intertemporal perspective (GARDINER 2011, 2010). This is because, once emitted, greenhouse gasses persist in the atmosphere. Among them, carbon dioxide (CO2) from burning fossil fuels is particularly resilient, with a half-life in the atmosphere ranging from about 120 to 200 years (ARCHER, 2009). This means that CO2 molecules released during the combustion of coal from the world's first steam engine, designed by John Newcomen in the 18th century, are still in the atmosphere today. Moreover, current emissions will continue to affect the climate for centuries to come, with about 25% of these emissions potentially remaining indefinitely by human temporal standards. The intertemporal dispersion between cause and effect skews the incentive structure in favor of present generations to the detriment of future ones: 'we, the present ones', are tempted to maximize economic benefits from (monetary) cheap energy sources, while passing the resulting harms onto those who come after us. From the self-interested perspective of 'any' successive generation, it seems rational to 'pass the bill' to the next one and so on.

Finally, climate change is not only urgent and fraught with dilemmas, but also intersects with a range of complex and seemingly unrelated issues on global politics. Given the existing injustices within the global economic order, we can reasonably expect it to generate a plethora of 'compounded injustices' that deepen exploit inequalities unrelated to climate (SHUE, 1992). The distribution of social and

economic vulnerabilities between climate agents is radically asymmetric both in the geographical and intertemporal dimensions discussed above. For instance, rising global temperatures — leading to droughts, desertification, salinization of drinking water, and deadly heatwaves — disproportionately threatens equatorial and tropical regions, where the vast majority of the world's poor reside (MENDELSOHN, DINAR and WILLIAMS, 2006). This constitutes a compounded injustice, as these populations have contributed the least to the depletion of carbon absorption yet may suffer the most severe impacts of climate disruption. For example, communities directly threatened by thermal expansion of the oceans — such as those in the Ganges River delta (India and Bangladesh) and Pacific islands facing submersion — have contributed minimally, if at all, to the emissions causing the irreversible destruction of their land and way of living. Future generations, along with other species, are especially vulnerable to these compounded injustices (NOLT, 2011; PALMER, 2011). Current energy policies provide such inadequate protection for the vital interests of future generations that the crime of 'postericide' — the intentional or reckless disregard for the conditions required for future generations to live decent, fulfilling lives — has been proposed as a legal deterrent (McKINNON, 2017).

Given that climate change is conceptualized as an urgent collective action problem intersecting with broader global justice issues, it is 'pro tanto' justifiable to construct normative criteria for regulating emissions based on distributive justice theories. Principles of fair allocation can offer a framework for fair cooperation, allowing agents with moderate altruism to use these ethical benchmarks to monitor and encourage mutual compliance. Because centralized political authorities are absent from the global picture — whether for good or bad reasons — reasonable agents can still seek solutions through reciprocal informal regulation, coordinated through a shared conception of climate justice. In this sense, climate justice merely extends the innovative and successful application of distributive justice theories to related global problems, such as the ethics of global poverty, migration, and just war (cf. CARENS, 2013; POGGE, 2002; SINGER, 1972; WALZER, 1977).

What, then, are the main competing conceptions of justice? Although the urgency component tends to foster a search for overlapping consensus and ethical ecumenism, a central dispute within first-generation theories focuses on whether the appropriate principles for just emission should be historical, end-state, or some compromise of both. Following the distinction draw by Robert Nozick (1974), historical principles cannot determine whether a given distributive outcome is just. Or not without first evaluating the temporal processes that produced it. End-state principles, on the other hand, seek the conformity of results to predetermined distributive patterns — following the classic form of 'to each according to x, from each according to y'. When applied to the problem of just emissions, three classes of distributive principles emerge: 01. principles tracking past responsibilities for pollution, 02. principles based on some metric of allocative (end-estate) fairness and 03. pragmatic or political principles that seek to recruit already institutionalized international legislation to the cause of climate justice.

To summarize a lengthy and complex discussion, we can say that type 01. Principles — 'the polluter must pay' — follow the rationale of addressing negative externalities by accounting for each country's CO2 emission history. These principles are based on the idea that responsibility for the climate crisis should be assigned differently to those who benefited from industrialization compared to those who did not (cf. MOELLENDORF, 2009; SHUE, 2010b, pp. 102–105; SINGER, 2010, pp. 187–190). When countries violate strict negative obligations to avoid harming others globally, historical accountability becomes a key component of climate justice, measured by each country's cumulative emissions since the Industrial Revolution —essentially reflecting how much each nation has consumed of the world's carbon budget.

Despite the clear moral appeal of holding polluters accountable, there are two significant challenges to this principle. First, assigning historical responsibility means attributing not just causal but moral responsibility to polluting agents. Nearly half of the Earth's carbon budget was consumed before the full impact of greenhouse gasses was widely understood (EKWURZEL et al., 2017). If, alternatively, we apply historical principles by counting emissions only from the moment when the effects of climate change were indisputably recognized — say,

from the first IPCC reports in the 1990s — a new problem arises: many countries that have yet to achieve adequate levels of human development now need to increase emissions[7]. There is no non-arbitrary way to address this issue solely by considering historical responsibilities (MOELLENDORF, 2009, pp. 122-124).

These considerations steer us toward end-state principles for emissions allocation, such as the equal-share principle, which seeks to limit global emissions 'equitably' among parties. Consider the goal of stabilizing the climate at 2°C by 2050, as recommended by the IPCC — an ambitious target from an emissions control perspective, necessitating up to an 80% reduction from current levels. Egalitarian distributive conceptions typically calculate the remaining carbon budget and seek to divide this burden equitably among countries. In this case, the remaining 'carbon space' in the atmosphere is treated as a valuable, scarce good to be allocated among equal claimants. Of course, strictly equal divisions would be undesirable. The wide disparity in average energy consumption between countries would render undifferentiated principles highly detrimental to poorer nations, compelling them to further reduce their already low consumption levels. As Henry Shue (2010) rightly pointed out, not all emissions are equal. Some are humanly necessary — subsistence emissions — while others are socially extravagant — luxury emissions — and any sensible principle of climate justice must take this distinction into account. "Those living in desperate poverty ought not to be required to restrain their emissions, thereby remaining in poverty, in order that those living in luxury should not have to restrain their emissions" (SHUE 2010a, p. 202).

One approach to recalibrating this principle — reflecting the general rationale behind the international carbon market established after the Paris Agreement in 2015 — is the 'Principle of Equitable Shares', as developed by Peter Singer (2010). This egalitarian proposal compares the per capita emission volumes of each country — that is, a type of global egalitarianism that treats the individual living within each country as the ultimate moral unit. The carbon budget is then

[7]It is important to note that there is substantial evidence indicating that, at least since the 1970s, not only a small fraction of the scientific community and environmental activists but also the fossil fuel sector as a whole has been fully aware of the climate implications of burning fossil fuels (FRANTA, 2021).

allocated based on the emissions required to meet the 02°C target, divided by the projected population of each country by 2050. To illustrate the significant discrepancies in per capita emissions worldwide, the United States and Australia each emitted nearly 15 tons per person in 2022, while Saudi Arabia reached 18 tons. In contrast, Mexico, Indonesia, Brazil, and India emitted 04 tons, 2.6 tons, 2.2 tons, and 02 tons per person, respectively. Meanwhile, countries in Sub-Saharan Africa emitted less than 01 ton on average[8]. Halving the total emissions by 2050 would result in per capita emissions ranging from 1.3 tons to 1.7 tons. The 'positive' emission balance of poor countries could then be traded in an international market of basic entitlements. This would be a way to ensure compliance from major polluters while simultaneously encouraging international income redistribution between the global North and South. However, simply transitioning to an equal per capita share leaves untouched the complex issue of historical injustices stemming from past emissions, which have enriched developed nations at the expense of poorer ones. Moreover, it remains uncertain whether, under the current global economic order, market-based cap-and-trade proposals would adequately meet the development needs of poorer countries.

Meanwhile, a third group of conceptions is rooted in the pragmatic framework of international law for assessing fair emissions levels. Instead of focusing on ideal criteria for fair allocations, this approach argues that climate justice should draw on prevailing practices in human rights and international legal litigation as the conceptual tools to support basic moral demands. One example is Simon Caney's argument for a "minimum moral threshold", which posits that climate change threatens a specific set of essential human rights already safeguarded by any legitimate international policy, such as the human right to life, health, and subsistence (CANEY, 2010). This is an example of a pragmatic strategy insofar as it distinguishes among the impacts of climate change, prioritizing only 'those effects that violate [human] rights' from the full range of possible consequences. Additionally, this approach is pragmatic in that it seeks to guide and validate climate change policies through a justice-based lens, drawing on the historical and institutional processes that have recognized fundamental rights in

[8]Available at <https://ourworldindata.org/grapher/co-emissions-per-capita?time=latest>.

international law. However, it's important to note that perspectives rooted in human rights do not fully address the normative dilemmas raised by the distributive theories discussed above. What they do allow is a form of pragmatic prioritization of demands and emission targets that are sensitive to the impacts of climate change on fundamental human rights and freedoms.

Critics of human rights-based approaches often emphasize that the conventional human rights framework, as it is currently institutionalized, disproportionately focuses on minimalist and individualist accounts of rights, while neglecting to address the broader, structural causes of climate change (MOYN, 2024). Moreover, as I will explore in more depth in the subsequent section — especially through the concept of tipping points — it remains far from clear whether this framework is equipped to grapple with the complexity of stabilizing the planetary climate system. The granular analysis of individual rights may simply be ill-suited to encompass the sweeping and systemic nature of the environmental challenges we now face.

In conclusion, early climate justice theories primarily framed themselves as an applied ethics approach to climate change, focusing on establishing distributive principles for addressing an urgent collective action problem that intersects with other pressing global issues. As I have argued, this approach offered two key advantages. First, it highlights the distinctive normative structure of climate change challenges. Second, it leverages existing institutions — such as markets, trade sanctions, and human rights — as political tools to govern an emerging international regime for regulating greenhouse gas emissions.

The (productive) justice of energy regimes

Despite decades of awareness-raising and disputes over different equitable criteria for allocating CO2 emissions, the current scenario in the climate fight could not be more desperate. Not only have the timid promises to control emissions made in the Paris agreement gone unfulfilled, but in 2023 the planet reached an all-time record of over 40 billion tons of CO2 emissions, nearly 37 billions of which came solely from fossil fuels (IEA, 2023). This alarming trend leaves us with just 6 years of current global emissions before we reach a 50% chance of exceeding

a 1.5°C increase in global temperature by around 2030[9]. Even the few promising breakthroughs in clean energy, which have made solar and wind power competitive with fossil fuels for the first time in our generation, are offset by the reality that coal, oil, and natural gas still account for over 80% of the world's primary energy. As previously noted, the carbon-intensive technologies associated with jet fuel, transoceanic shipping, cement, steel, and nitrogenic-based fertilizers — core elements of the modern world — are still far from having feasible renewable alternatives. Meanwhile, the first consequences of the climate crisis are already being felt around the world.

Against this stark backdrop, a new generation of theories has sought to fundamentally reshape both the analytical frameworks and core concerns of climate justice. Previously, we conceptualized the climate crisis primarily as an urgent collective action dilemma, intersecting with pressing but distinct global justice challenges. However, emerging perspectives have reconceptualized the climate crisis as a critical distributive conflict, shaped by the political economy of a profoundly inequitable global energy regime. Let me outline the main components of this shift.

Pivotality

The current state of climate science has significantly redefined the sense of 'urgency' traditionally associated with climate policies. Much of the discourse on climate justice, while recognizing the problem of free-riding, often conceptualizes the intertemporal emissions issue as linear in nature. This assumption is flawed. A linear understanding would suggest that additional CO_2 emissions today would result in proportionate climate damage for future generations. However, recent scientific consensus indicates that the Earth's climate system consists of multiple interconnected "planetary boundaries" that have maintained climate stability for the past 10,000 years (ROCKSTRÖM et al., 2009). Crossing these thresholds leads to environmental changes that are both irreversible and exponential. Thus, even minor

[9]Available at <https://sustainability.stanford.edu/news/global-carbon-emissions-fossil-fuels-reached-record-high-2023>.

increases in carbon emissions could trigger profound and unpredictable climate and socio-political shifts for future generations.

As Henry Shue (2021) argues, traditional conceptions of justice were based on the premise that 01. the greater the cumulative CO_2 emissions, the greater the climate change humanity will endure. Yet, the existence of climate tipping points introduces an additional, disturbing reality: 02. the more climate change we experience, the more future climate change will be exacerbated. This raises the question: how do marginal increments in emissions trigger catastrophic processes? It is crucial to differentiate between irreversibility and positive feedback mechanisms. For instance, the melting of polar ice sheets serves as a clear illustration of this phenomenon. The IPCC projects that, without significant reductions in carbon emissions, sea levels are expected to rise between 0.5 and 1.3 meters by 2100. However, if the melting of Greenland and West Antarctica becomes irreversible, sea levels could rise by 07 meters (Greenland) and 8.5 meters (West Antarctica) (MASLIN, 2021, pp. 94-95). Even this scenario, already dire, underestimates the broader implications. Approximately 2.15 billion people currently live in coastal areas, with nearly 01 billion residing in low-elevation coastal zones. Beyond the immediate impact, the loss of ice will 'accelerate' global warming: as reflective polar ice gives way to darker ocean water with a lower albedo, more solar radiation will be absorbed, further accelerating both ocean and atmospheric heating, leading to even more ice melt — a self-reinforcing cycle. Similar feedback loops are seen in the thawing of Boreal permafrost, releasing methane, a potent greenhouse gas, and the degradation of the Amazon rainforest. Deforestation and overexploitation could transform the Amazon from a vital carbon sink into a savannah, disrupting hydrological cycles across the continent (LOVEJOY and NOBRE, 2019).

This understanding of tipping points has led Shue (2021) to reconceptualize intergenerational justice. The near future likely represents our last chance to avert two forms of tipping points: environmental tipping points, which could trigger exponential climate disruption, and sociopolitical tipping points, which could lead to irreversible shifts in human cooperation and democratic governance. As Shue (2021) emphasizes, "we are not only the first (generation) to be able to understand

what to do, but —most importantly — we may also be the last in a position to act before we exacerbate some major threats" (SHUE, 2021, p. 06). The concept of urgency fails to fully capture the stakes of this crisis. The prospect of a world plagued by irreversible tipping points renders any intergenerational bargaining —where current emissions are offset by expected future wealth — meaningless. There is, in essence, only one iteration of the intertemporal prisoner's dilemma to be played. This reality imposes a unique moral obligation on our generation: to envision and implement a just transition to a carbon-neutral energy regime. The goal is not merely to achieve equitable mitigation within the existing framework but to fundamentally transform it. Our moral and political failure would be akin to an act of 'postericide' (McKINNON 2022, 2017).

Distributive conflicts

When viewed through the lens of an ethics of distribution, the major obstacle to an effective and fair climate policy lies in the net costs of mitigation. As in the prisoner's dilemma, no agent (or countries, in this case) has the rational incentive to adopt mitigation measures unilaterally. But what if the obstacle is of a different kind? As noted earlier, the costs of clean energy sources have steadily declined in recent years, and several nations have sought to reduce their emissions domestically, independently of the actions of pivotal climate agents such as the US and China. As new conceptions of climate justice have argued, perhaps the real political challenge of climate may be more accurately framed as a classic problem of political economy (MOELLENDORF, 2022; SHUE, 2021; TÁIWÓ, 2022).

The true object of climate justice is best understood as the global energy regime that sustains the current world economic and political order, along with the distributive conflicts inherent in any effort to change this regime. Achieving climate justice involves identifying pathways to transition to an alternative global energy regime, not only on a technical-scientific level but also from economic and political perspectives. As John Rawls famously argued, institutional structures should be considered the primary objects of justice due to their profound and pervasive influence on our actions and expectations — structures into which we are socialized

without choice or intention (RAWLS, 1971). Moreover, framing principles of justice around institutional arrangements, rather than individual actions, has the advantage of simplifying the moral task of assigning benefits and responsibilities, allowing political action to focus on objective structures rather than the subjective ethical decisions of individual agents, such as states (though this dimension still holds relevance) [10].

The pursuit of climate justice entails navigating transition routes toward a low-carbon global energy regime, a shift that will inevitably entail losses for those who currently benefit from the high-carbon status quo. As Darrel Moellendorf (2022, pp. 30-31, pp. 125-128) argues, there will be powerful losers in this transition. These include the owners of underground oil, coal, and natural gas, the entire fossil fuel sector responsible for extraction, refining, and distribution — which in the U.S. alone directly or indirectly employs over 10 million people (SHUE, 2021, p. 122) — financial institutions reliant on these industries, and nations whose fiscal and political stability depend heavily on oil revenues (TÁIWÓ, 2024). Aklin and Mildenberger (2020) incisively capture the political economy of energy, concluding that any viable and just climate policy will require a "dramatic renegotiation of the institutions that structure economic and social activity within each economy" (AKLIN and MILDENBERGER (2020, p. 10). This renegotiation will provoke distributive conflicts over climate policymaking, exacerbated by ideological clashes among politicians, voters, and interest groups.

Key questions emerge: Which sectors should be abolished, and which should be revitalized? How should we compensate and remedy unjust losses? How should wealth and power embedded in carbon-based political regimes be redistributed? Issues of power and domination become as critical as carbon allocation, while the dual imperatives of climate adaptation and economic reparations take center stage in climate politics.

Building on Lucas Stanczyk's (2012) insightful proposal, this new wave of conceptions of climate justice can be understood as forms of 'productive justice' — a disciplined theorization of how and under what conditions social goods and harms

[10] It is important to highlight that applying the concept of the basic structure to conceptualize the global energy regime goes beyond Rawlsian interpretations, which the author himself would likely not have endorsed, as he confined his principles of justice to the borders of nation-states.

are produced, by whom, and in what quantity. If justice demands that we ensure and pass down a stable climate system to future generations, then the pressing question is how we should transform the existing global energy regime to make this achievable. As Moellendorf (2022) argues, a crucial early step toward achieving justice in energy regimes — beyond merely evaluating distributive conflicts from a normative perspective — is to recognize and integrate the asymmetries created by the existing global system. More specifically, any energy transition must account for the right to human development in low- and middle-income countries, as "human development is an immensely energy-intensive issue" (MOELLENDORF, 2022, p. 77).

There is a clear correlation between energy consumption and high Human Development Index (HDI) scores. Currently, nearly 01 billion people live in energy poverty, and 2.6 billion rely on biomass as an energy source, resulting in approximately 2.5 million premature deaths per year. Therefore, any just climate mitigation agenda must include the right to economic development for low- and middle-income countries, recognizing their need to pursue poverty eradication (measured by human development rather than merely per capita income) through energy-intensive means. This inevitably adds another layer of global economic conflict, this time between poor, emerging, and rich countries.

Imposing climate justice measures without acknowledging these disparities — even if implemented equitably — risks creating unjust economic domination, potentially trapping poorer nations in a cycle of poverty from which wealthier countries stand to benefit. Reconciling mitigation policies with the right to development requires dismantling the current energy regime and building an alternative zero-carbon system, subsidized by rich countries as a matter of justice. Global injustices therefore warrant global accountability, which should take the form of locally adapted climate policies financed by wealthier nations, including technology transfers, infrastructure development, debt relief, or grants for clean energy transitions.

The Indian post-colonial theorist Amitav Ghosh clearly articulates the stakes of productive justice by framing the moral challenges of climate politics as a

global distributive conflict arising from a common, yet unevenly structured, global energy regime:

> The nature of the carbon economy is such that *power*, no less than wealth, is largely dependent on the consumption of fossil fuels [...] if the emissions of some countries were to be curbed while the emissions of others were allowed to rise, then this would lead inevitably to a redistribution of global power [...] the resulting equity would lead not just to a redistribution of wealth but also to a recalibration of global power (GHOSH, 2016, p. 143).

Historical integration

The final component of this new wave of climate justice theories highlights the need to recognize global warming as a problem rooted in political economy, particularly by conceptualizing climate and energy as integral to the history of modern capitalist societies. While distributive ethics have long acknowledged the intersection of climate issues with other political challenges, such as global poverty and migration, there is an important distinction between viewing climate vulnerability and economic poverty as separate yet related issues and recognizing them as different facets of the same historical process (BRUM, 2021; FERDINAND, 2024; TÁIWÓ, 2022).

A notable example of this trend is found in Olúfémi Táiwò's work (2022), which argues from a post-colonial perspective that contemporary demands for climate justice fundamentally represent claims for historical reparation, tied to the construction of the global energy regime (TÁIWÓ, 2022). According to Táiwò (2022), the climate crisis is merely the latest — and potentially final — chapter of environmental colonialism, set in motion by European imperial expansion (in the form of a 'global racial empire') over the Indigenous populations of the Americas, Africa, and Asia. Truly anti-colonial climate policies, Táiwò contends (2022), should aim to reconfigure global power structures, establishing new decision-making institutions and global programs for historical and environmental reparations for countries in the Global South.

Táiwò (2022) further argues that the so-called 'Columbian Exchange' — the forced transfer of plants, animals, diseases, and technologies between the Old World (Europe, Africa, and Asia) and the New World (the Americas) after Columbus's voyages in 1492. And the subsequent Native American genocide, which resulted in

the deaths of over 50 million people in the 16th and 17th centuries, should be regarded as the first event of the Anthropocene (TÁIWÓ, 2022). The military and ecological conquest of the world laid the foundation for the global energy regime, paving the way for coal-powered mechanized production. The links between climate crisis, slavery, and colonialism trace back to a global distribution of wealth and vulnerability shaped by centuries of imperial power and its ecological impacts, further compounded by recent histories of pollution in the Global North and corporate fossil fuel interests. As the impacts of climate change worsen, their burdens will disproportionately fall on those rendered most vulnerable by these historical dynamics. Climate change will redistribute social advantages, further entrenching the distributional injustices inherited from the past.

In this context, Frantz Fanon's famous critique of European colonialism remains relevant: "This European opulence is literally scandalous, for it has been founded on slavery, it has been nourished with the blood of slaves, and it comes directly from the soil and subsoil of that underdeveloped world" (FANON, 2005, p. 96). While we might disagree with Táiwò's (2022) ambitious global reparation program, which includes unconditional basic income for the descendants of enslaved populations, the creation of a Global Energy Transition Fund, and the elimination of tax havens for fossil fuel wealth. It remains an undeniable truth that those most vulnerable to the effects of climate change have historically been the least responsible for the development of the global energy regime. Quite the contrary: from a historical perspective, they were often subjugated by the power dynamics that shaped the modern world. Any just energy transition must integrate race, climate, and wealth as different components of one single equation.

Political agency and intergenerational morality

Assuming the validity of a productive, justice-based approach to climate justice — one that reintroduces politics into normative frameworks —I argue that two key issues warrant the attention of this new generation of theories[11]. The first

[11]Perhaps a third, equally significant issue — though one I won't be able to explore in depth here — is the unique and challenging position of developing countries within the current global energy regime. Addressing productive justice in these contexts poses particular and special challenges. I extend my gratitude to Maruhk Doctor for the suggestion.

issue concerns the possibilities for climate political agency, while the second addresses the unique challenges posed by intertemporal morality. Put simply, reframing climate justice demands that we also reconsider the field's core subjects, including the practical dimensions of political agency and the ethical dilemmas inherent in intertemporal moral considerations. I will briefly discuss both.

The politics of climate change poses a profound challenge to traditional conceptions of political agency and, by extension, the potential for transformative changes in our energy infrastructure in the coming decades. To meet climate stabilization targets of 1.5°C, or even 2°C, we must undertake a comprehensive overhaul of energy production, transmission, and consumption. However, institutional politics may be ill-equipped for this task. Productive justice theorists argue that no Pareto-efficient path exists; while the transition offers broad benefits, it imposes significant costs on a small, economically and politically powerful elite. This group, with much to lose, is likely to resist the shift away from carbon through coordinated political efforts, and potentially even through violent opposition.

In the coming decades, any significant climate action will inevitably entail a political struggle against the foundations of our 'carbon democracies', as Timothy Mitchell (2011) aptly describes. The functioning of modern democracies is deeply intertwined with carbon-based energy systems, which shape the possibilities for political action. Policies aimed at reducing fossil fuel exploitation will undoubtedly threaten entrenched financial interests. Therefore, the climate struggle must be understood as a form of contentious politics. Defined as collective political activity occurring outside formal institutions, where outside groups mobilize to challenge power structures and seek systemic change through disruption, protest, or direct action (TILLY, 1997; TILLY and TARROW, 2015). In this context, social movements pressure the state and established political actors to reform institutions, policies, and practices, creating new pathways for justice[12].

[12]For more on how contentious social moments can open up avenues for justice, see MOODY-ADAMS, 2023.

However, the long history of modern social struggles reveals at least two distinct ways to conceive effective extra-institutional political agency. The first model is the politics of hope. In this version of contentious politics, broad grassroots, inter-class, and possibly international coalitions form to counter the influence of the fossil fuel industry through extra-institutional but peaceful mass mobilizations. These mobilizations focus on building bonds of solidarity among different social classes and nations. Prominent historical examples of this model of contentious politics include the successful struggles against racial inequality in the USA and South Africa, as well as the peaceful overthrow of dictators and military juntas through large-scale civil resistance actions in Latin America and East Europe (CHENOWETH and STEPHAN, 2021). As one of the great articulators the politics of hope puts it, "it's a movement based on a philosophy [...] it is a movement based on hope" (KING, 1961).

The politics of hope is reflected in the work of contemporary climate justice theorists like Darrell Moellendorf (2022), as well as in social movements such as Extinction Rebellion, the Jetze Generation, Brazil's Indigenous People Articulation, and, to some extent, Greta Thunberg's global activism. What role does climate justice theory play in fostering a politics of hope? As Moellendorf (2022) explains, closely following Martin Luther King Jr., the task of contesting and containing entrenched political forces "will require mobilizing a greater political force—a mass mobilization. And for that mobilization to occur, a vision of a better future is essential" (MOELLENDORF 2022, p. 31). In other words, we must collectively articulate a conception of climate justice that can politically anchor the hopes of diverse economic sectors and social groups. The role of political theory, in this context, is to identify and empower "hope-makers" — proposals that are both morally just and empirically feasible for the future (MOELLENDORF 2022, p. 34). Comparative studies on the success of pacifist and non-pacifist movements emphasize that peaceful, large-scale transformations succeed only when they manage to generate positive visions of the future (CHENOWETH and STEPHAN, 2012).

A second model of contestation is the politics of fear. Although largely abandoned since the collapse of the Soviet Union, this paradigm is rooted in the

tradition of revolutionary politics, characterized by militant vanguard actions, including acts of sabotage and disruption against unjust political regimes. Unlike the politics of hope, which emphasizes solidarity among groups with divergent interests, an effective politics of fear operates through clandestine activities, distanced from the public sphere, and employs destructive actions against the system. This approach involves abandoning strategic pacifism to increase the costs of sustaining an unjust regime. According to environmental theorist and activist Andreas Malm, this is precisely the model climate movements should adopt (MALM, 2021). Malm (2021) argues that after thirty years of explicitly pacifist environmental activism, not only have global emissions remained largely unchecked, but new investments in fossil fuel infrastructure have proliferated. "Once an investor has constructed a coal-fired power plant or a pipeline, or any other such unit, he will not want to dismantle it… it would mean pecuniary disaster", Malm explains, noting that "once the [returns] has started flowing in, the owner will have an abiding interest in keeping the unit operational for as long as possible" (MALM, 2021, pp. 28-29).

A closer examination of the existing fossil fuel infrastructure reveals that nearly half of its capacity was installed after 2004 (the year of COP10). Even more disheartening for proponents of the politics of hope is that the total capacity of the plants currently in operation is enough to surpass the 1.5°C target (MALM, 2021, pp. 29-30; TONG et al., 2019). Malm's argument (2021) is stark but compelling: only by imposing direct operational costs on dirty energy infrastructure — literally 'blowing up the pipelines' — can we prevent capitalism from exploiting this potential. While Moellendorf's politics (2022) of hope draws on the militant pacifism of Martin Luther King Jr., Malm (2021) turns to the radical tradition of Malcolm X and what became known as radical flank theory. This theory posits that the success of social movements often depends on the presence of more radical factions within the movement, which raise the political stakes of the status quo, making the demands of moderate movements seem more acceptable to the ruling class (HAINES, 1988). The politics of frightening elites operates on the assumption that only a credible threat of catastrophic disruption to the oil economy's revenues will compel the true holders of economic power to the climate negotiating table.

The second critical challenge for conceptions of justice focused on production concerns the particularly thorny problem of intertemporal morality. What do we owe future generations in terms of justice, and how can we best fulfill our obligations today? The contemporary discussion on interoperable ethics is vast and sophisticated[13]. The point I would like to emphasize concerns a specific element of this debate: what kind of moral attitude or normative engagement should we adopt towards our descendants?

Setting aside the notorious 'non-identity problem', which, along with collective action dilemmas, dominated the first wave of climate justice debates, the most prominent contemporary approaches to distributing intertemporal burdens and benefits are predominantly consequentialist. These approaches seek to extend the maximization of expected benefits and the aggregation of utility to intergenerational decisions. This is justified by the fact that we not only bequeath damage and wealth to people who have not yet been born, but also an ever-increasing stock of material and immaterial wealth (STERN, 2010). Since the industrial revolution, we can fairly assert that each generation has passed on both global stocks of wealth (unequally distributed resources) and carbon emissions (with unevenly distributed risks) to subsequent generations. Consequently, it is reasonable to pursue criteria of justice that seek to maximize average utility, measured by overall consumption, across generations.

However, the future can extend infinitely, which means that distributing even small increments of utility across an infinite number of generations can create a substantial burden on the present generation. If modest gains for future generations can impose significant costs on the current generation (and so on ad infinitum), we might conclude—echoing Rawls' critique (1971) of 'intra'generational utilitarianism —that intergenerational utilitarianism fails to adequately respect the separateness of generations. To address this issue, utilitarians typically apply an intertemporal discount rate, which decreases the value of future utility at a constant rate simply because it is temporally distant. The appropriateness of discount rates in relation to the well-being of future generations has been fiercely debated. Opinions vary widely, ranging from

[13]For an introduction to the state of the art, see GROSSERIES and MEYER, 2012; GROSSERIES, 2023.

'presentist' views, which express confidence in future technological breakthroughs to sustain human well-being, to the extremes of 'long-termism', which argues that our primary moral obligation today is to preserve conditions for the distant future (MACASKILL, 2022).

In both cases, the underlying assumption is that the central goal of moral actions toward future people (and possibly other beings) requires some form of care relationship. According to Stephen Darwall's distinction (2002), 'caring for someone' involves a set of dispositions directed toward the other's well-being; it demands attentiveness to their individuality and welfare and often includes perspective-taking, where one considers the person's point of view to determine what is best for them (DARWALL, 2002). By contrast, 'respecting someone' entails a different normative relation. Respect involves valuing a person's dignity as an agent, which means treating their point of view and capacity for autonomous decision-making as important factors that should inform our actions. "[W]hereas caring for someone involves relating [to a person] as a being with a welfare", argues Darwall, "respect for persons is a responsiveness to [other's] capacity for free agency" (DARWALL, 2002, p. 14). While care attitudes prioritize another person's welfare as the primary reason for action, respect attitudes center on their dignity as free agents, recognizing the exercise and the social conditions for free agency as the more salient normative feature. Thus, while both care and respect treat a person's standing as intrinsically valuable, they differ in how they relate to that person: care responds to a person's well-being, while respect acknowledges their autonomy and dignity.

Both normative attitudes are fundamental to our moral toolkit. However, it seems that current intergenerational principles of justice have relied predominantly on the care component. Although the subjectivist orientation of intergenerational utilitarianism may seem insufficient and superficial as a comprehensive theory of care, it is true that the predominant value affirmed in such theories is the material 'welfare' of future persons — their standards of consumption and material satisfaction as measured by economic production. The question arises, however, as to whether the appropriate intergenerational principles in climate justice should place greater emphasis on respect. As Stanczyk (2021) argues, rather than focusing

solely on maximizing intergenerational welfare, we should strive to bequeath an environmental and sociopolitical infrastructure that protects the fundamental rights, democratic capacities for self-governance, and basic economic justice of future generations (STANCZYK, 2021). In other words, we do not have a duty to help future generations secure more of whatever they desire; rather, we have an obligation "to preserve the environment and social basis for just institutions, so that whoever comes to exist in the future will *then* have her rights respected and otherwise be treated fairly" (STANCZYK 2021, p. 309). Respecting future generations means honoring their (future) capacity for free agency, collective autonomy, and the justice-based claims essential to human dignity. However, we still need to tackle the conceptual and practical tasks necessary to realize this principle.

The tangible outcomes of this new wave of theories remain uncertain, and we have yet to determine their ability to tackle the main practical challenges of our climate crises. On the one hand, both care and respect are part of a climate policy that is both effective and equitable. On the other hand, policies of fear and hope have always been present in moments of great social transformation. The current task of climate justice theories is to articulate these considerations and concerns in the clearest and most coherent way possible. In any case, and echoing the prescient words of two of the most renowned German socialists of the 19th century, it is certain that, from now on, every climate struggle will be framed as a fiercely political struggle rather than just another ethical dilemma.

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