

Environmental Justice Implications of Market-Based Climate Policies

As the climate crisis has deepened over the past two decades and the world has looked for politically feasible solutions, one group of strategies has been shown to have wide acceptance in the global environmental arena: market-based climate policies. These policies generally use economic reasoning to incentivize or gradually “nudge” emitters of greenhouse gasses (and consumers of carbon-intensive products/services) away from the use of fossil fuels and toward renewable energy/less carbon-intensive actions. We don’t have to look far for different types of examples of these policies. The European Union’s cap-and-trade program, established in 2005, is the biggest pollution trading system on the planet, “capping” a total amount of emissions for its entire system (which includes power plants, industrial facilities, etc. in the E.U.) and then allowing “trading” of the emission allowances that are handed out to each facility (meaning facilities that pollute less than their “cap” can trade that “extra” pollution they have in hand to facilities that pollute more than their cap). Carbon offsets are both part of large-scale systems such as cap-and-trade programs as well as small-scale consumer offerings (such as through the airline industry during ticket booking), and usually “offset” carbon emissions produced by groups and individuals in developed nations by setting aside or restoring ecosystems that naturally sequester carbon in developing nations. Finally, carbon taxes, which many economists view as the best chance of quickly transitioning society away from fossil fuels with our current economic system, use basic price signals to decrease consumer demand for carbon-intensive products and services.

In this paper, the types of policies described will be investigated for their environmental justice implications – exploring who benefits from these systems, who might be at risk from them, and the general efficacy of the neoliberal governance model they fall under at reducing carbon emissions. Since mitigation of carbon emissions is one of the most important issues in global environmental justice today (Chapman et al., 2018) – directly deciding what life will look like for hundreds of millions of vulnerable people in the future – exploring whether market-based climate policies are the best route for mitigation will be a central question of this paper. Following that exploration,

alternative solutions to the climate crisis will be offered, with regulatory and other non-market-based policy examples leading to a wider discussion of the role of alternative visions of environmentalism in forging a sustainable future.

The Social Cost of Carbon

Fundamental to understanding many of the market-based climate policies discussed in this paper is the concept of the “social cost of carbon” (SCC). Inherently, this social cost is an equity and justice issue: it tries to measure the cost of future damage to society that a unit of carbon emissions will cause, rising at a certain percentage each year to capture the increased risk posed by future emissions in an already-changed climate system. That measure – generally portrayed in dollars per metric ton of CO₂ – can then be used to inform climate policies, such as how to tax carbon emissions at the “optimal” economic level or to set prices in a cap-and-trade market. Boyce (2018) highlights both the challenge of setting an “accurate” price for this measure amid so much future uncertainty, as well as the problems inherent in the ethos of viewing climate change in the frame of a cost-benefit analysis: higher warming scenarios (above 3 degrees Celsius) are calculated on an economic and social scale much in the same way as lower warming scenarios, though a commonly-held belief among climate scientists is that tipping points could be reached with warming scenarios above 2 degrees Celsius that cause runaway warming – and thus runaway economic and social impacts (Chavas et al., 2016). Further, Boyce (2018) also cites Seneviratne et al. (2016) and Karmalkar and Bradley (2016), who point out that global GDP losses due to warming may be chronically understating the damage to vulnerable populations, the exact kind of justice issue that we are addressing in this paper. As a matter of course, it should be noted that concepts such as SCC have largely been created and developed by minority world capitalist economists, bringing up critical issues of representation by majority world communities (Kuehn, 2000) who have had far less of a hand in creating the climate crisis and a chance to offer their own solutions to it.

The most important takeaways from discussions of the social cost of carbon are: 1) SCC tends to vary widely based on differences in climate modeling and interpretation; 2) because of that variability, SCC is difficult to apply to policy and is easily manipulated by anti-climate policymakers (such as those currently in the Trump Administration who have changed the government's measure of the social cost of carbon to as low as \$1/ton, a worthlessly small measure); and 3) many studies worry that models are inherently downplaying the long-term economic and social threat of climate change to the world's most vulnerable populations. Building off the final point, our reading this year of Boyce and Pastor (2013) made the case for higher prices on carbon that could have cascading *positive* effects due to mitigation, rather than the understated effects on vulnerable populations scenario cited above; they even point to one study (Berk et al., 2006) that says the health benefits of strong mitigative climate policies outweigh the costs "*...even when the long-term benefits of avoided climate impacts are not taken into account,*" i.e. the health benefits of mitigation are immediately worth more than the economic costs even in the absence of preventing any future damage from climate change. This shows how critical it is to get the social cost of carbon correct (i.e. high enough) to create effective market-based climate policies, and how the environmental justice implications can swing wildly from extremely negative (if the price is too low) to self-reinforcingly positive (when the price is high enough).

Solutions to this inherent problem with SCC have given rise to the new measure of the Global Social Cost of Carbon (GSCC), which assigns SCC to individual countries based on their share of emissions and vulnerability to climate impacts; this is done primarily with the issue of equity in mind, as it seeks to locally internalize the global externalities associated with emitting carbon, especially on the part of the world's main emitters (Ricke et al., 2018). This paper will revisit some of the ideas associated with the social cost of carbon when discussing carbon taxes – a more applied version of SCC – in a proceeding section.

Cap-and-Trade

Among global climate policies, cap-and-trade is likely both the most widely known among the general public and the most ignominious among those who study and work in climate change. This shouldn't come as a surprise, as cap-and-trade policies have been one of the longest-running solutions to climate change mitigation, and have been subject to a number of high-profile failures and loopholes – most visibly with the carbon price collapse of the European Union's trading market in 2013. As Klein (2014) points out, as part of environmentalism's pro-business transition during Reagan's 1980s American neoliberalization, the idea for the first cap-and-trade market was put forward not by economists, but rather by the new pro-corporate president of the Environmental Defense Fund, Fred Krupp – a former lawyer whose idea quickly caught on with Wall Street and corporate industry. These programs are best understood in this frame: they are not so much a policy to quickly fight climate change (proven effective regulatory environmental policy mechanisms have existed for half a century that could have done that – and still can) but rather they are a reflection of an ethos of financializing everything (and thus creating investment markets that previously did not exist) that came with the radically pro-market forces that rose to global power during the 1980s. In reality, they should be seen primarily as a financial instrument with effects on climate mitigation, rather than an explicit climate policy.

Given cap-and-trade's longevity, the literature on justice concerns in currently existing programs is relatively strong. Our friend Laurent (2011) wrote on environmental justice issues in the European Union, touching on the importance of effectively redistributing revenue from market-based climate mechanisms such as cap-and-trade to “conciliate environmental and social concerns” – and in that way echoing the main principles of the “just sustainability” concept put forward by Agyeman (2008). Huang et al. (2019) focused on the issue of furthering social equity in a potential Chinese emissions market, in particular underlining the need for specifically including subsidies for coal workers unemployed by a transition to renewable energy (the coal industry

would decline by 75% by 2030 in their created emissions market scenario), along with direct payments to low income households.

To its credit, California includes some of these recommendations in its current cap-and-trade system, redistributing portions of the revenues to disadvantaged communities for renewable energy infrastructure, energy efficiency upgrades, and public transportation. Still, one study notes that even with the general redistribution schemes, the system has created an effectively regressive energy tax, pushing energy poverty rates to 15% in certain counties in the state (Monyei et al., 2019). California also highlights a general problem with cap-and-trade schemes, as well as the shortcomings of any kind of program that uses credits to allow continued emissions by polluters: the credits they hand out sometimes incorrectly measure the amount of carbon sequestered, often by wide margins. For example, a U.C. Berkeley study released in April of 2019 found that California's cap-and-trade program overestimated the amount of carbon in its offset projects by a third of the entire market (Haya, 2019). The environmental justice implications of this shortcoming is impossible to miss. Not only are these emissions credits often gained through questionable land acquisition strategies in majority world countries – a topic we will now investigate with carbon offsets (Busscher et al., 2018), but the simple fact that emission reductions are being significantly overstated means that these mechanisms are (at best) misleading and (at worst) taking the place of other potentially far more effective climate policies that don't have such dubious environmental justice outcomes.

Carbon Offsets

Carbon offsets are a general term for projects that sequester carbon as part of a larger system, and can thus be a *part* of many market-based climate mechanisms (such as a cap-and-trade program); they merit their own section in this paper due to their vitally important environmental justice implications. Though carbon offset projects exist in the minority world – such as those that are part of the U.S. Forest Protocol, which represents 80% of California's cap-and-trade offset credits (Haya, 2019) – they are

more often found in the majority world, where land acquisition is less expensive, land use is less scrutinized, and governments are often looking for economic development/capital injection opportunities. Klein (2014) underlines the inherent neocolonialism in this idea, with offsets often displacing indigenous communities from their land or restricting their historic use of it, all for the purposes of enabling the carbon-heavy lifestyles of those in the developed world. As the author points out, the added irony, of course, is that those displaced often live some of the most sustainable, low-carbon livelihoods on earth.

Offsets therefore substitute the historic forces of colonialism for modern ones: corporations and non-governmental organizations in place of nations, and economic levers in place of direct force (though force often still exists in these projects, as Klein rightly reminds us of). This “land grabbing” or “*green* grabbing” (Busscher et al., 2018) mirrors the current and historic experiences of indigenous groups in minority world nations such as Native Americans (Vickery and Hunter, 2016) and is made possible in the majority world by the shift in governance strategies with global neoliberalism: because the traditional role of the state presiding over investment and land use decisions is diminished in this governance framework, a power vacuum is often filled by previously mentioned actors (multinational corporations, wealthy individuals, and NGOs), with increased risk to justice principles from the concurrent diminishing of regulatory oversight. Busscher et al. (2018) also highlight that this “stakeholder” model of neoliberal governance could theoretically lead to an increase in participatory processes that benefit small-scale actors such as indigenous groups, but in practice the lack of political and economic capital that these small groups possess allow them no more agency or control over decision-making (and often less, in fact) than traditional governance structures.

Given this information, then, carbon offsets are often a prime example of procedural injustice in the climate change arena (Schlosberg and Collins, 2014) with much of the academic literature on the subject reflecting that notion. In a study of 56 forest carbon offset projects, Marion Suiseeya and Caplow (2013) found that the

majority did not comply with procedural justice principles, despite all of them entering into a certification scheme that required them to be included. In addition, a study of two separate forest offset projects in Uganda found distributive justice to be a main concern among the local impacted population of both projects, with concerns voiced over the inherent injustice in the idea of offsetting (Fisher et al., 2018). Finally, Klein (2014) provides numerous examples of offset projects never occurring even though they are paid for and counted in trading markets (including outright fraudulent offset scams that were part of the E.U. cap-and-trade market), and she bluntly and powerfully gets to the problem at the heart of the idea:

When the Big Green groups refer to offsets as the ‘low-hanging fruit’ of climate action, they are in fact making a crude cost-benefit analysis that concludes that it’s easier to cordon off a forest inhabited by politically weak people in a poor country than to stop politically powerful corporate emitters in rich countries – that it’s easier to pick the fruit, in other words, than dig up the roots.

One could make the argument that all of these market-based solutions are dancing around the problem of climate change instead of facing it – in fact, that’s what this paper argues – and offsets represent perhaps the most obvious case of these solutions infringing on basic notions of justice for host communities.

Shifting focus to smaller-scale carbon offsets – the kind usually offered to consumers by airlines – brings us other aspects of justice concerns. First, there is the voluntary aspect of them, raising questions about the effectiveness and dissonance of relying on people engaging in carbon-intensive practices to opt-in to fund projects to fight climate change; second, there is the cost issue, meaning lower-income individuals are less likely to be involved – further creating an “environmentalism of the rich” (Dauvergne, 2016) rather than an “environmentalism of the poor” (Anguelovski and Martinez-Alier, 2014). And third, as mentioned before, offset projects are difficult to measure and validate: there is no guarantee that the offset project a consumer pays for yields the sequestration promised, does so in a way that follows environmental justice principles, or even occurs at all. Certification schemes such as those mentioned in Marion Suiseeya and Caplow (2013) aim to remedy the uncertainty of offset projects

actually occurring, but the paper's findings confirm that environmental justice principles are usually not followed in these types of projects. With that information, we are left to wonder: how can we actually ensure that carbon offset programs are enacted with justice principles, if in fact certification schemes fail at certifying that? Finally, there is some movement on making these carbon offset programs less voluntary: under new United Nations guidelines, airlines that fly internationally will be forced to offset their carbon emissions starting in 2021. But those increased costs will likely be passed straight to consumers (continuing a regressive theme in these market-based solutions that will be touched upon in the next section), and many of the justice questions outlined above still remain. However, that does not mention the most glaring moral issue with offsets: communities in the majority world will not only bear the worst consequences from climate change (which they have played little part in creating), but they are also being forced to bear the worst costs from the minority world's market-based attempts at mitigation.

Carbon Taxes

A more applied version of the social cost of carbon, carbon taxes are currently in vogue, particularly with economists and a bipartisan group of congresspeople in the United States (the Climate Solutions Caucus). While SCC is a concept that tries to value the economic costs of carbon emissions vs. future social damage, carbon taxes are that concept applied to policy. Importantly, carbon tax policies can be implemented in a variety of ways, and that implementation is critical for how effective they are and who in society they most impact (i.e. their distributional effects). Carbon taxes fill one of the big gaps inherent in cap-and-trade programs, namely that they are able to impact emissions that are not solely point-source, including transportation, consumer goods, and carbon-intensive services/products. Because they cover basically everything that involves producing carbon emissions, many policymakers feel that they are society's best option for averting catastrophic climate change, disincentivizing both the burning of fossil fuel in power plants and the purchasing of carbon-intensive goods (Tresch, 2015).

This is, of course, a slightly myopic viewpoint, as non-market-mechanisms such as regulation have not even been considered for mainstream climate policy (even with their proven track record at solving previous environmental problems). However, given the current status of carbon taxes in the popular imagination and the wealth of research and writing on potential equity issues associated with them, it is a good exercise to investigate how they might affect environmental justice concerns.

Given how ubiquitous products and services that rely on carbon are in daily life, imagining how a blanket carbon tax would have distributional impacts is not difficult: much like a sales tax, a carbon tax without redistributive designs would be regressive – impacting low income individuals and households more proportionally than those with higher incomes. Since transportation and energy costs in particular make up many times more of a low income household's proportional yearly spending than a higher income household's – up to three times more for energy (Drehobl and Ross, 2016) – carbon taxes would be doubly regressive, hitting disadvantaged households where it hurts the most. Because of this, much of the discussion around carbon taxes has been about how to make them more equitable, with most proposed policies recommending direct dividends to low income households. However, the low-hanging analysis here is that even yearly dividends (such as a package with a tax refund) make the usual mistake of misunderstanding poverty, believing that a yearly monetary windfall will make up for the increases in day-to-day spending that can severely impact the livelihood of individuals living paycheck to paycheck.

Research on equity and carbon taxes fall along the lines of the conversation outlined above, including Berry (2019), whose simulations of carbon taxes in France confirms the regressive nature of the policy absent redistribution, and looks into the most effective means of “revenue recycling” toward low-income households to reduce fuel poverty (which is a European term analogous to the concept of energy justice in the United States); Wang et al. (2019) confirmed much of Berry's findings in the Chinese context, though interestingly found that carbon taxes could be progressive when applied to transportation fuel; finally, Heffron (2018) proposes a novel path for incorporating

better distributive justice into energy taxation through the creation of Sovereign Wealth Funds (SWFs) – much like the Norwegian model – in which energy resources are directly taxed at high rates, put into a general fund, and redistributed into social programs that mainly benefit low-income households. The author places this idea in the framework of a just transition (Evans and Phelan, 2016, McCauley and Heffron, 2018), arguing that it should take a central role in the movement from carbon-intensive energy paradigms to ones that are based on renewables.

Neoliberal Governance and the Shortcomings of Modern Environmentalism

Amid all of the discussions of proper carbon pricing, the mechanisms of cap-and-trade, and how carbon offsets function (or don't function), we were distracted from perhaps the most critical point about market-based climate policies: they have not been able to stop – or even to meaningfully reduce – global carbon emissions. They are, on a very basic level, failing at the job they were envisioned to do. The greatest environmental justice question in this paper is not how each one of these policies affects issues of equity and justice among impacted groups, countries, and stakeholders; it is whether the holistic strategy of market-based solutions can solve the gravest environmental justice threat – climate change – in human history. So far, the answer to that question has been a resounding *no*: market-based climate policies have failed to meet the scope and speed required to avert catastrophe, and there are arguments to be made that a lack of regulatory willpower in favor of market mechanisms over the past 30 years is one of the very reasons why the world is in such a dire situation. Many scientists (and planetary futurists) have made the case that even incremental reductions in emissions starting in the 1990s based on national and global regulatory structures would have brought the world to the 1.5 degrees above baseline goal outlined in the Paris Accord, likely averting the worst effects of climate change (Meinshausen, 2009). That the most powerful nations of the world instead chose to delay action before turning to market mechanisms (a clear concession to capital and a hallmark of neoliberal governance) will likely be seen as the largest abdication of

responsibility for ensuring intergenerational justice (Schlosberg and Collins, 2014, Vickery and Hunter, 2016) in human history.

The main problem with market-based solutions is that they were not created to drastically mitigate climate change; they were created to *attempt* to mitigate climate change using a very specific approach that global capital was comfortable with. Those are two very different ideas, and it is unsurprising that, after 30 years of these policies stumbling forward amid steadily rising emissions, worsening catastrophic climate events, and growing income inequality, the difference between the two would be so stark. Part of the larger movement toward assigning monetary value to everything that rose to prominence in the 1980s so that it could be included in marketplaces (which still continues to this day), Anguelovski and Martinez-Alier (2014) echo the problem of modern conservationists viewing nature as “natural capital”. As with many environmental justice issues that deal in qualitative terms of human experience in the environment – no less valid, it should be pointed out, than a monetary valuation – the minority world’s modern governments and economies have treated non-quantified or unquantifiable topics as if they do not exist, leading to the creation of concepts like ecosystem goods and services: a system of cataloging the monetary worth of an ecosystem down to the individual fish or square foot of grassland. This, of course, has manifested in the rapid and concrete movement of mainstream environmentalism from an activist counterweight against global capital to a willing participant in capital’s systems and methodologies (Klein, 2014).

It is no small wonder, then, that climate change has not been addressed in the timeframe needed: when the task of solving the problem is based on confronting some of the largest corporations in the world, and the environmental movement has spent the better part of three decades assuming the methodology, outlook, and even personnel of those corporations, how can we be surprised that change hasn’t come? Yet the tools for solving climate change have existed for as long as society has solved environmental degradation through regulation; they are the tools that drove the incredible progress

brought by the Clean Air and Clean Water Acts, and the tools that have driven gains in any number of disparate issues, from food safety to improving workplace environments.

No, climate change will not be solved simply by regulating carbon emissions; it will now require a total rethinking of developed society and economy – how we spatially organize ourselves, how we move, and what our daily lives look like. But the emissions are a big part of the current picture, and it is currently the most pressing and critical part of ensuring a livable future. Even though we know what the solutions are to this crisis, we have still left it very late, and because we have delayed so long (all the while trying these unproven market-based solutions) we now face the necessity of comparatively radical action. In an environment more conducive to humor, there would be some irony in the forces of global capital endangering the very system it built its wealth on – capitalism – by trying to evade regulatory climate policy that might have slightly impacted its bottom lines. But there is no humor to be found in where the world is, hurtling toward a precipice with an economic system that is fundamentally at odds with how natural systems work on the planet. We now need every tool at our disposal, including the market-based policies that this paper has examined: equitable cap-and-trade programs that knowingly and mindfully redistribute income from emitters, progressive carbon taxes that alleviate poverty instead of further it, and heavy, top-down regulation that reduce emissions as quickly as possible. We must now mobilize our entire global society and economy in the fight against climate change, and we must do it now.

A New Environmentalism

If there is a silver lining to be found in this crisis, it is surely that climate change represents history's greatest chance at reorganizing society in ways that are more equitable and just. Apart from the fact that climate action will be inherently redistributive – the adaptive public infrastructure, public housing for climate migrants, and transportation systems (to name only a few) society builds in the future that benefit lower-income communities will inherently shift wealth downward – we must also ensure

that the companies that caused this crisis (Big Oil, in particular, but corporate emitters as well) pay to solve it. This idea brings forward Kuehn's (2000) taxonomy, channeling Dr. Robert Bullard's principles of environmental justice, only with a twist: we must not only shift the burden of proof to the polluters, we must also make the polluters pay for the damages they have inflicted, whether they were technically legal at the time or not:

Corrective justice, therefore, is not used in the narrow Aristotelian rectificatory sense but instead in a broader, applied sense that violators be caught and punished and not reap benefits for disregarding legal standards and that injuries caused by the acts of another, whether a violation of law or not, be remedied.

As we have seen with the erosion of Title VI protections in environmental justice cases (Mohai et al., 2009) and the general gutting of legal teeth from the Civil Rights Act, we cannot rely on the law to guide us in knowing what is right: we not only have to establish new standards and policies, but we must channel the likes of Critical Race Theory scholars in examining and remaking the very institutions our society is founded on (Lawrence, 1987). Only when we reckon with the fact that impediments to future change are structural and systemic can we begin to wrestle with how to solve the massive environmental problems of the modern age: we must remake society in a more just and equitable image, and we must do it through environmentalism.

Mainstream environmentalism must adopt the mantle of Agyeman's (2008) "just sustainability", fusing social justice and environmental justice concerns to argue for the right to basic human needs: a sustainable and livable environment, of course, but also universal health care, living wages, the elimination of poverty and hunger, and free education. As Shellenberger and Nordhaus (2009) make clear in their groundbreaking article "The Death of Environmentalism", the movement must be remade outside of the image of a special interest, leaving behind the outdated strategies and sensibilities of a largely white, male environmental perspective that has focused on land conservation and compromise with business interests. Interestingly, the authors recommend learning from conservative strategists, who realize how issues stack and intertwine: "Because today's conservatives understand the strategic importance of tax cuts for killing social

programs, never do they say, ‘That’s not my issue.’” Environmentalism must realize that cuts to social programs, deregulation, and increasing privatization are *their* issues: those forces are all part of one constellation that has effectively coopted and destroyed their movement. Market-based climate policies are part of that constellation, speaking the language of capital instead of the language of the environment, paying service to economic laws instead of natural ones. Unfortunately for all of us, natural laws will always prevail.

The only way to rebuild environmentalism, then, is to own the issues of basic human needs, putting forward a holistic vision of what a just, sustainable society should look like. Schlosberg and Collins (2014) capture this perfectly in their investigation of the evolving links between the environmental justice and the climate justice movements:

There is a growing recognition, post-Katrina, that the environment is no longer simply another symptom of existing social injustice, along with poverty, health issues, and substandard housing. Instead, many in the environmental justice community are starting to look at the relationship between environment and justice in a different way—that the environment and climate system are not simply symptoms of existing injustice, but instead the necessary conditions for the achievement of social justice.

Fortunately, Shellenberger and Nordhaus were also prescient: the new climate justice movement is the vehicle for the global remaking of society – perhaps for the very first time – in an image of equality and justice. There can be no justice for anyone without a livable planet, and it is on these most fundamental terms that the future of civilization will be decided. Like many visionary campaigns, climate justice is being led by the young and the marginalized, energizing the larger environmental movement by forcing it to reckon with larger concerns of equity – and what is morally right. It is on this moral battleground, finally, that the obfuscation and veneer of concern from pro-market forces will be stripped away, leaving only the young, clear-eyed and undefeatable, standing against the most powerful companies in the world. While market-based climate policies have been our only accepted tools during this fight in the past, they must not be our only ones in the future.

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