Emissions Rights and Environmental Justice

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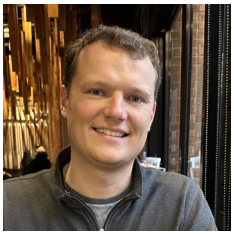

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Climate change is one of the most important problems of our time. A critical aspect of this problem is determining who should bear its costs. In this respect, climate change is a problem of distributive justice.

My aim in this essay is to sketch a view about how to distribute the costs of climate change. This approach will consist of two claims: one analytical and the other normative. The analytical claim is that we should think about the atmosphere—specifically, its ability to absorb greenhouse gases—as a scarce natural resource that commands an economic rent. The normative claim is that we should use Georgist rather than Lockean principles to distribute this economic rent. John Locke held that the person who first improves a natural resource can claim ownership of the resource (Locke, 1689). Henry George, by contrast, held that improvers can only obtain an entitlement to the value of their improvement, but not to the additional value of the resource.

In his *magnum opus*, George wrote: "The equal right of all men to the use of land is as clear as their equal right to breathe the air—it is a right proclaimed by the fact of their existence. For we cannot suppose that some men have a right to be in this world and others no right" (George, 1879, book 7 chapter 1). Following George, I will argue that everyone has an equal right to use the atmosphere, and that this entails that rights to emit should be allocated on an egalitarian basis to everyone in the world.

The Lockean view, by contrast, holds that citizens of nations that have been emitting for a long time—rich Western nations—should be accorded more emissions rights (Bovens, 2011). First, I will argue for my core analytical claim: that the atmosphere is now a scarce resource that commands an economic rent. Second, I will argue for my core normative claim: that the economic rents generated by the atmosphere, like all scarce natural resource rents, should be distributed on an egalitarian basis.

The atmosphere as a scarce resource

Humanity has been turning biomass into usable energy for a very long time. Like other animal species, we eat plants and meat and turn them into calories, even storing some for later as fat. But about a million years ago, humans started to use woodburning for other purposes, such as cooking food, keeping warm, and eventually, for manufacturing useful tools. Burning wood emits carbon into the atmosphere, just like burning fossil fuels. At first the human population was so small, and it used so little energy per capita, that the atmosphere could easily absorb the carbon we emitted.

Fast forward to the dawn of the industrial revolution, when the human population was much larger, and big portions of it started harnessing fossil fuels—mostly coal in England and the eastern US—for industrialization. Here there was a step change in the amount of carbon humanity emitted. At first, the atmosphere still retained the capacity to absorb the amount of carbon that was emitted. But sometime later, perhaps in the mid-20th century, the human population had grown larger, more people were using fossil fuels for industrial applications, and the use of this energy per capita had grown too. The atmosphere's capacity for safely absorbing the carbon we emitted had been exhausted. But humanity kept emitting, and increasing its emissions every year. Now, some think that humanity's annual emissions may have finally peaked, but there is considerable uncertainty about this conclusion, and emissions levels will still be very high even if they begin to modestly decline (Brookings Institution, 2023).

Let us suppose that the turning point happened around 1950 (my discussion here follows Bovens, 2011). Before this turning point, burning fossil fuels had no adverse impacts on the "atmospheric commons", meaning the Earth's shared air. After 1950, burning fossil fuels began to trigger adverse impacts. Before 1950, humans could all freely use the commonly pooled resource of the atmosphere's ability to absorb greenhouse gas emissions. But after 1950, there was not enough of this resource to satisfy everyone's desire to use it, which meant it became scarce.

Comparing land with the atmosphere

Compare this situation with our use of another natural resource: land. Originally, there was ample land for everyone to farm on. But eventually, all of the best land was claimed and there was not enough good land to satisfy everyone's desire to use it. Land thus became a scarce resource.

There are some dissimilarities between land and the atmosphere. Land is an excludable resource, but the atmosphere is not. I can put up a fence around a portion of land that I claim to keep other people out, but there is no way that I can contain my emissions to a specific portion of the atmosphere. But both resources are rivalrous, meaning that one person's use of a portion of the resource precludes others from using it.

The excludability of land made it possible to turn land into private property. The enclosure movement in early modern England saw the first widespread conversion of this kind, where fences were erected around previously commonly used land that now kept out unwanted animals and people. The privatization of the commons solved the problem of the overutilization of scarce land, but at the cost of creating a large and helpless class of landless workers who found their way into the slums of urbanizing and industrializing England, and out to the frontier of the new world. Legal institutions, also, were part of the technological backdrop that made private appropriation of land possible: erecting a fence around some land would provide little security without the legal institutions that were already well-developed in early modern England and protected property owners.

By contrast, the atmosphere is a global commons. There is nothing that people in one part of the world can do to fence off their part of the atmosphere to protect it from people in another part of the world from using it as a pollution dump. The only mechanism that could police and regulate emissions would be an international legal framework which allocated rights to emit to each country and had some enforcement process to prevent countries from exceeding their allotted share. We will return to this framework, which is being developed, in the next section.

It is critical to understand for the purposes of this essay that the excludability of land explains why private property systems evolved to govern land when it became scarce. The non-excludability of the atmosphere explains why such institutions have not emerged to govern its use, and also explains why it has continued to be depleted even after it has become scarce.

Economic rents for the atmosphere

Scarce natural resources command economic rents—a long-term income above the minimum required to produce them. The production costs of natural resources are zero: they existed prior to and independent of human beings. But if someone controls a supply of a scarce resource such as coal, then they can charge others for using the resource as an economic rent. When landowners receive a "rental" payment from tenants who live in their properties, the economic rent is the portion of the payment for the use of land, which is separate from the portions for the use of the structure on the land. If a landowner uses his or her land, he or she still collects an imputed rent from the land, which is the opportunity cost of its use. If the land were not being used, it could be rented out to others at the market rate.

The atmosphere also commands an economic rent, since it is now a scarce natural resource. Since the atmosphere is not excludable, this economic rent is collected implicitly by the current users of the atmosphere, who get to use a scarce resource for free.

However, it is future generations who must pay this rent: they will suffer from the adverse impact on the atmospheric commons caused by present and past economic activity. In effect, people who burn fossil fuels today benefit from the fact that the negative external consequences of their behavior are not priced, which harms future generations. Ecological economists use the concept of natural capital to argue that the present generation is drawing down natural capital at an unsustainable rate, leaving less for future generations. This economic transfer is equivalent to a rental payment made by future generations to the present generation (Dasgupta, 2021).

Inter-generational justice and natural resources

We have just established that the atmosphere's capacity to absorb greenhouse gases is a scarce natural resource which commands an economic rent. Currently, people who emit greenhouse gases by burning fossil fuels collect this economic rent in the form of unsustainably low energy prices, because most countries do not impose carbon taxes, and the countries that do set them too low. Instead of making the people who use fossil fuels today pay the economic rent for the resource they use, society has chosen to defer the payment of the rent to future generations, who will pay it in the form of resource depletion, environmental damage, forced migration, natural disasters, property damage, and the other harms that climate change

will cause. Members of the present generation, in proportion to how much they choose to emit, receive this rent paid by future generations in the form of an economic surplus that is subsidized by the degradation of natural resources.

International climate negotiations aim to gradually shift the economic burden from future generations to the present generation, by raising the cost of emitting. This is what distributive justice requires, since we have no right to undermine the prospects of future generations. One generation leaving depleted natural resources to future generations may represent a serious harm, because people need access to natural resources to produce valuable goods and services, and to enjoy them directly. The key question is how can this rent be distributed among members of the present generation? We must reduce our collective emissions by making users of fossil fuels pay more, but the issue of who will receive these payments remains unanswered.

The Georgist conception of natural resource distributive justice

Broadly speaking, there are two prominent approaches for how to distribute natural resource rents, exemplified by the works of John Locke and Henry George. Locke's approach is to assign a natural resource rent to the person who first puts the resource to productive use by "mixing their labor" with it. George's approach is to socialize the natural resource rents and let everyone in the community have an equal share of them. Which approach should we use to distribute rights to emit greenhouse gases among members of the present generation?

As noted in the introduction, this essay argues in favor of the Georgist approach for distributing natural resource rents. Put briefly, we should distribute rents from natural resources on an egalitarian basis because no one made the resources in question. The entire Earth, with all of its oil, coal, timber and countless other resources, existed before human beings; it follows that these resources are not the result of anyone's productive effort.

People who exploit a natural resource should be entitled to the value that their labor creates, but this labor does not entitle them to the resource's pre-existing value. Thus, the coal dug up by a miner has a dual nature: some of its value is due to the miner's productive efforts of finding, digging and refining the coal, and transporting it to its end user. But some of the coal's value is due to its pre-existing natural qualities. In the case of coal, land, and other natural resources, there are actuarial and econometric methodologies that allow us to separate these two sources of value.

Everyone is entitled to the value that they produce. Therefore, allowing some people to gain a legal entitlement to income from scarce natural resources would be unjust, because no individual created their pre-existing value. Likewise, in a system in which natural resources are privately owned, individuals cannot keep all the value that they produce. This is because some of this value will have to be paid as rent for the natural resources required in the production process. (Every form of production requires natural resources: even an office job requires a building, often on expensive downtown land.). Thus, private appropriation of natural resources is doubly unjust. Firstly, it is unjust because the appropriators did not create the value of the resource from which they derive economic benefits. Secondly, it is unjust because users must pay for a resource that should be equally available to everyone.

This paper does not argue conclusively for Georgist principles of distributive justice. Instead, it contends that by applying these principles to the case of carbon emissions it is possible to achieve a credible version of environmental justice. This is one part of a broader abductive argumentative strategy that complements the deductive strategy I pursue in other work. The fact that it provides a credible version of environmental justice strengthens the case for a Georgist approach to distributive justice.

The Lockean conception of natural resource distributive justice

Before developing my Georgist approach to emissions rights in particular, I will sketch the contrasting Lockean account. Luc Bovens (2011) develops a Lockean account of how to distribute emissions rights where developed countries such as the UK and US would have more emissions rights because they have been emitting large amounts of greenhouse gases for a long period of time.

By starting to farm on a piece of land, you "mix your labor" with that land and hence become entitled to its future economic rents and to continue to use it. Here, by burning fossil fuels for some economic purpose, you "mix your labor" with the atmosphere and hence become entitled to the future economic rents commanded by the portion of the atmosphere's absorption capacity that you use. This entitlement also allows you to continue burning more fossil fuels in future.

In both cases, being the first to use a resource for a productive purpose gives you an entitlement to that resource's economic rents. Locke's labor mixing metaphor is a bit more strained in the case of emissions than it is in the original case of agricultural improvements to land. However, the important point is that the resource in question is being

used for an economically productive purpose.

The Lockean approach would have emissions rights distributed to countries which correspond to how much they emitted when humanity's emissions first exceeded the atmosphere's ability to absorb them. In this essay, we suppose 1950 to be the approximate date. This proposal would assign almost all of the emissions rights to western Europe and the US. If a cap-and-trade system were implemented, then other countries could buy emissions permits from these advanced countries which would have gained an original entitlement as first emitters.

Georgist distributive justice applied to the atmosphere

A Georgist proposal for distributing emissions rights would look quite different. Georgists deny that one can do anything to gain an entitlement to use a natural resource in perpetuity, or an entitlement to its economic rents. "Mixing your labor" gives you a right to the value that your labor adds to the natural resource. However, it does not give you a right to the resource's economic rent, because it was not created by your labor.

Based on this view, Georgists argue that natural resource rents should not be allocated to whoever happened to use the resource productively first. Instead, Georgists maintain that natural resource rents should be distributed equally to everyone in the community, because since no one created these resources, everyone should have an equal right to use them.

How would a Georgist cap and trade system function in practice? First, a global carbon emissions budget would be set each year. The budget would be less than the estimated current total annual cost of carbon emissions to the global economy and would decline each year until we eventually reach net zero. How quickly the global carbon budget shrunk would depend on how quickly we transferred liability to pay the atmosphere's rent from present to future generations. Rights to emit greenhouse gasses would be distributed equally among all people. Meanwhile, a global carbon emissions market would be established to allow trading of emissions rights. The price of emissions rights would be modest at first but would grow as the global annual carbon emissions budget shrank.

Under a Georgist cap and trade system, people in the global south would sell their permits to people in the global north, because the former do not use as much energy as the latter. Resources would flow from north to south as permits flowed from south to north. By contrast, a Lockean cap and trade system would

initially allocate most emissions permits to the global north, where most of the permits would ultimately be used. But as countries in the global south developed and further industrialized, they would have to purchase rights to emit carbon from the global north. Permits would flow from north to south as resources flowed from south to north.

It is easy to see why such a Lockean cap and trade system would run counter to what justice requires. People in the global south do not need to buy permits for economic development from the global north. On the contrary, the global north should need to buy permits from the global south in order to continue to use more than their per capita share of natural resources. The latter outcome would be obtained under a Georgist cap and trade system.

Global north countries do not own the atmosphere because they were the first to pollute it. Rather, everyone has an equal claim to the atmosphere. Some people may use more than their fair share, but in consequence, they should compensate those who use proportionately less.

Applications, implementation and climate negotiations

Here is a back of the envelope calculation. In 2022, average per capita CO2 emissions globally were 4.84 tons per person. The US emitted 14.44 tons per person, compared with 4.76 for France, 2.15 tons for Brazil, and 1.91 tons for India. Meanwhile, almost every sub-Saharan African country emitted less than 1 ton per person.

In the first year of a Georgist cap-and-trade system, each person would be assigned, for example, 4.5 tons. The average person in sub-Saharan Africa would thus have 3.5-4 more tons of permits than they needed, based on current average per capita emissions, while their US counterparts would need to buy about 10 tons of annual permits on the carbon market or reduce their emissions. The cost of emissions permits would be determined by market supply and demand, but it would rise over time, eventually matching the social cost of carbon.

Initially, the cost would probably range between $25 and $100 per ton – let us say $50. This would mean that Americans would start by paying, on average, $500 for the carbon that they use every year. They would get 4.5 tons for free, but would have to pay for the remaining 10 tons. Each year, the free amount would decrease slightly, while the amount one would have to pay for fossil fuel dependent lifestyles would increase slightly, perhaps by about 10% per year. Furthermore, each person in sub-Saharan Africa would receive between $150 and $200 from

selling their emissions permits to Americans, which would provide a much-needed boost to economic development and poverty alleviation on the African continent.

The Georgist cap-and-trade system would also present an effective compromise between the interests of developed and developing countries in international climate negotiations. Developing countries usually argue that developed countries should assume more of the burden because they already emit a lot of carbon, which helped them become rich in the first place. The flaw in this argument is that most of the developed world's industrialization took place before the atmosphere became a scarce resource; thus, it is arguable that this development did not come at a cost to the global south.

Developed countries usually accept that they owe some assistance to developing countries by helping them to develop in a green way. However, the assistance they offer often falls short of distributing emissions rights equally. Developing countries should not get more than their equal share of emissions rights because developed countries burned fossil fuels well before the atmosphere became a scarce resource. But neither should they receive more than their equal share of emissions rights because they have been emitting for a longer period of time. Everyone should get the same emissions rights, because everyone has an equal claim to the value of the scarce resource that the atmosphere represents.

Some economists point out that a cap-and-trade system is economically efficient no matter how the emissions permits are initially distributed, so long as the market works well and there are low transaction costs. This is true. Regardless of whether the Lockean or Georgist cap-and-trade system is adopted, the market's invisible hand will move the emissions permits to their most productive use, as long as the market functions correctly. Both systems are efficient, but only one system is equitable. The Lockean system enables resource rents to be largely captured by people in the global north, but the Georgist system distributes them equally to everyone. Under the Georgist system, most carbon-intensive activities would still take place in the global north, but people in the global south would be justly compensated for their relative deprivation.

Conclusion

Henry George's system demonstrates how to distribute natural resources equitably among the present generation, and also between present and future generations. As George himself fittingly concludes (1879, Book 7, Chapter 1):

If we are all here by the equal permission of the Creator, we are all

here with an equal title to the enjoyment of his bounty—with an equal right to the use of all that nature so impartially offers. This is a right which is natural and inalienable; it is a right which vests in every human being as he enters the world, and which during his continuance in the world can be limited only by the equal rights of others…If all existing men were to unite to grant away their equal rights, they could not grant away the right of those who follow them. For what are we but tenants for a day? Have we made the earth, that we should determine the rights of those who after us shall tenant it in their turn? The Almighty, who created the earth for man and man for the earth, has entailed it upon all the generations of the children of men by a decree written upon the constitution of all things—a decree which no human action can bar and no prescription determine.

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