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Emissions Sufficientarianism

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Abstract

This paper defends strong emissions sufficientarianism as an approach to assigning moral rights to generate greenhouse gas emissions. Strong emissions sufficientarianism holds that only subsistence emitting is morally permissible. This paper argues that, since it is uncertain how many subsistence emissions there will be, the present generation owes it to future generations to refrain from generating non-subsistence emissions, not to risk imposing on them a tragic choice between sacrificing themselves and contributing to very dangerous climate change. The paper also addresses the charge that emissions sufficientarianism, in general, is too permissive since it entails a right to contribute to very dangerous climate change. The overall message is that, given the moral urgency posed by climate change, there is little room for distributive principles besides emissions sufficientarianism. This casts doubt on the appropriateness of relying on carbon budgets in assigning rights to emit.

Keywords: carbon budget; climate change; climate justice; greenhouse gas emissions; intergenerational justice

Introduction

Humanity faces a short time horizon if global warming is to be held at reasonably safe levels. The Intergovernmental Panel on Climate Change, for example, estimates that if we want a two-in-three chance of limiting warming to 2 degrees Celsius relative to pre-industrial temperatures, then we must hold remaining emissions to 1150 $GtCO_2$ (IPCC 2021, 778). Given current emissions rates, humanity will deplete this volume of emissions in less than thirty years. How, then, ought moral rights to generate greenhouse gas (GHG) emissions be assigned? My aim in this paper is to explore one answer – *emissions sufficientarianism*. Emissions sufficientarianism states that people have a moral right to produce emissions to satisfy basic needs or vital interests. I shall argue that this is the correct view.

Emissions sufficientarianism as such is not controversial. It enjoys widespread support in the climate ethics literature insofar as most theorists believe that everyone is morally permitted to generate *subsistence emissions*, emissions necessary for 'survival or decency' (Shue 1993, 55). The predominant view, however, is that emissions sufficientarianism only supplies one part of the answer when allocating rights to emit. As Schulan, Tank, and Baatz (2023, 4) state in their recent authoritative overview of the debate, the thought is that emissions sufficientarianism represents 'a minimum requirement' for the just distribution of emissions entitlements rather than an exhaustive account. Against this, I shall raise and defend the possibility that emissions sufficientarianism is (now) the whole answer, meaning that only subsistence emissions are (now) morally permissible. I shall refer to this as endorsing a 'strong' version of emissions sufficientarianism.

The argument for strong emissions sufficientarianism developed here draws on the intergenerational uncertainty surrounding future needs to emit. The idea is that since we do not know how long people will rely on GHG emissions to satisfy their basic needs or vital interests, we in the present generation have an obligation of justice to avoid non-subsistence emissions in order not to infringe on future generations' opportunity to produce subsistence emissions. I call this the 'precautionary argument'. Crucially, the argument does not rely on the controversial claim that climate change has *already* gotten so bad that only subsistence emitting is morally permissible. It does not assume, for example, that, even if humanity completely decarbonizes next year, it would be impermissible to generate anything but subsistence emissions this year.[1] Instead, the argument highlights that, since at least some people may need to generate GHG emissions for quite some time longer, we must make sure that our emissions do not deplete, for inessential reasons, future people's opportunity to generate subsistence emissions without contributing to dangerous climate change. We owe it to future people to preserve the room they need to generate subsistence emissions if it turns out that decarbonization will not occur anytime soon.

The precautionary argument relies on two crucial assumptions: first, that we should give strong priority to subsistence emissions over other kinds of emissions and, second, that future people matter as much, morally speaking, as present people. I consider these assumptions uncontroversial, and readers who disagree with them should be warned that little I say here is designed to make you think otherwise. In addition to working out emissions sufficientarianism more carefully than has previously been done in the literature, my ambition is to show that these widely shared assumptions have surprising and perhaps uncomfortable implications for how we ought to assign emissions rights in the present.

The paper is structured as follows. In the next section, I define emissions sufficientarianism, distinguish between strong and weak versions of this view, and identify some reasons why emissions sufficientarianism looks attractive. In the section 'Too Strict? A Defense of Strong Emissions Sufficientarianism', I lay out the precautionary argument for strong emissions sufficientarianism and defend this argument against some objections. The section 'Emissions Sufficientarianism is too Permissive' is devoted to the claim that emissions sufficientarianism, in general, is too permissive because it equips us with a 'right to generate very dangerous climate change'.

Emissions Sufficientarianism

Scholars have identified several principles in discussing how moral rights to emit ought to be assigned.[2] One is the much-maligned *grandfathering* principle, which states that the right to emit is a positive function of past emissions. Another principle, to which we will return later, is the highly influential view called *emissions egalitarianism*. The topic of this paper, however, is emissions sufficientarianism. This principle states that:

> ***Emissions Sufficientarianism***. Each person has a moral right to produce the (net positive) number of GHG emissions necessary to secure sufficiency.

Emissions sufficientarianism immediately invites questions about the meaning of 'sufficiency'. However, before we address that question, it is worth highlighting some other features of how I set out the principle. The reason the principle refers to 'net positive' emissions is that,

[1]By 'decarbonization', I mean an outcome where humanity achieves (at least) net zero, i.e., a situation in which emissions of GHGs are matched by the removal of GHGs by sinks. Decarbonization is frequently also used to describe the *process* of making human activity produce fewer GHGs (especially CO_2). Note that achieving decarbonization, understood as an outcome, does not presuppose radically reducing emissions since, in theory, we could radically enhance sinks instead. However, like most commentators, I assume that net zero will involve greatly reduced emissions rates given the limits of negative emissions technologies (Anderson and Peters 2016; Fuss et al. 2018). Informally, the term 'decarbonization' should thus be understood as referring to a net zero outcome with very few emissions.

[2]For valuable overviews, see Meyer and Roser (2006), Roser and Seidel (2017), and Schulan et al. (2023).

considered as a class, there is no reason to doubt the moral permissibility of emissions that *lowers* total emissions or reduces the atmospheric stock of GHGs. It is clear, for example, that it is morally permissible to generate the emissions needed to manufacture and install solar panels since these emissions will make a net negative contribution to climate change insofar as they replace non-renewable energy sources.[3] In what follows, I shall write as if the right to 'emit' is the question. Still, the implicit assumption is always that we are talking about net positive contributions to the atmospheric concentration of GHGs. The expression 'produce emissions', moreover, should be understood as allowing for indirect emitting. For emissions sufficientarianism, it does not matter which agent physically releases GHGs into the atmosphere as long as the emissions are necessary to secure someone's sufficiency (Tank 2022). Suppose Agent A burns some fossil fuels, which is necessary to secure Agent B's sufficiency. In that case, emissions sufficientarianism will say that these emissions are permissible even though Agent B is not generating them.[4] It should be stressed that emissions sufficientarianism can say that the moral permission to generate subsistence emissions only holds *pro tanto*. I return to whether emissions sufficientarianism supports an absolute right to emit in the section 'Emissions Sufficientarianism is too Permissive'.

Let us now turn to the crucial question of what it means to secure 'sufficiency'. The literature has a wealth of answers, drawing on different currencies and set at different levels of ambitiousness (see Huseby 2019; Shields 2020 for overviews). However, the main distinction is arguably between positions that stress *basic needs* and those that emphasize a *decent life*. The former equate sufficiency with leading a non-impaired life of normal length as a functioning member of one's society (see, for example, Brock and Miller 2019; Griffin 1986, Ch. 3, p. 2007). The latter maintain that sufficiency requires not only that basic needs are fulfilled but also that one's life is reasonably good, either because it is free from fundamental dissatisfaction or because it includes a comfortable standard of living (see, for example, Caney 2009; Huseby 2020; Rao and Baer 2012). There is a significant overlap between the two positions, but the crucial difference is that decent-life positions are more demanding than the basic-needs ones. What unites them is that they seek to describe the minimal level of well-being or functioning to which all people are morally entitled simply by being human. To use Henry Shue's memorable phrase, the sufficiency threshold is supposed to mark 'the line beneath which no one is to be allowed to sink' (Shue 2020, 18).

As we shall see later, how we flesh out sufficiency matters for the force of emissions sufficientarianism. The claim that there is a moral right to produce GHG emissions, even though this contributes to climate change, will be more persuasive the lower we set the sufficiency threshold. Therefore, emissions sufficientarianism is more plausible when tied to basic needs rather than the more ambitious notion of a decent life. Here, however, it is enough to note that emissions sufficientarianism states that there is *some* level of well-being or functioning to which all people are minimally entitled. Its key claim is that people are morally permitted to produce GHG emissions necessary to reach this level. The view is aptly referred to as 'sufficientarianism' since it shares with the eponymous theory of justice the conviction that it is of special moral importance that people reach an adequate level of well-being or functioning.[5] It is important to note, however,

[3]However, a net negative contribution seems *pro tanto* impermissible if the actor easily could have made an even more negative contribution instead. I set this complication to one side here.

[4]Note that a set of emissions can count as subsistence emissions from one agent's perspective but not another. Suppose the food you buy to be adequately nourished contains the lowest emissions among your options. Suppose further, however, that the food company could have produced this food using far fewer emissions. It then seems that these emissions will count as subsistence emissions from your perspective but not the food company's. This added complexity is unavoidable once we allow for indirect emitting, but it does not pose any serious problems for determining moral permissibility since we could say that you are here permitted to bring about the emissions, whereas the food company is not (at least not in full).

[5]Sufficientarianism originates from Frankfurt's (1987) seminal paper 'Equality as a Moral Ideal', but modern debates surrounding it are deeply indebted to Casal's (2007) critical intervention. For an overview, see Huseby (2019) and Shields (2020). Sufficientarianism should not be confused with so-called 'eco-sufficiency', a view that has gained traction in environmental debates. Eco-sufficiency refers to the upper permissible limit of human impact on the environment. Sufficientarianism, by contrast, refers to the minimum each person is entitled to as a matter of justice (Kanschik 2016).

that one can hold that sufficiency carries special moral importance without thinking that it is the *only* desideratum of distributive justice (Shields 2020). Similiarly, recognizing sufficiency's special importance does not commit one to the further claim, endorsed by some sufficientarians, that inequalities over the sufficiency threshold are morally inconsequential.[6]

Although they rarely use the term, virtually all climate ethicists are emissions sufficientarians. This is evident because they endorse the moral right to produce so-called *subsistence emissions*; that is, emissions necessary to secure people's 'survival or decency' (Shue 1993, 55). Since 'survival or decency' is a pretty good approximation of what it means to secure sufficiency in the two senses just mentioned, it is fair to say that anyone who endorses a moral right to produce subsistence emissions also endorses emissions sufficientarianism. Put differently, an emissions sufficientarian believes that people are morally permitted to generate subsistence emissions (*because* they are subsistence emissions). However, while emissions sufficientarianism thus understood is widely endorsed, it is rare for climate ethicists to defend this view only. Instead, climate ethicists typically defend a hybrid view in which emissions sufficientarianism is but one part. Vanderheiden (2008), for example, argues that while the right to generate subsistence emissions should be secured, there is also a permissible set of remaining emissions that should be distributed equally. Caney (2009) proposes that the emissions left over once subsistence emissions have been guaranteed should, instead, be auctioned off, using the revenue raised to promote justice in various ways. The question of whether sufficiency exhausts the right to emit leads to the following important distinction:

> ***Weak Emissions Sufficientarianism***. Each person has a moral right to produce the (net positive) number of GHG emissions necessary to secure sufficiency, but other GHG emissions are permissible, too.
>
> ***Strong Emissions Sufficientarianism***. Each person has a moral right to produce the (net positive) number of GHG emissions necessary to secure sufficiency, but all other GHG emissions are morally impermissible.

Accounts such as those defended by Vanderheiden and Caney are emissions sufficientarian in the weak sense. They endorse the right to generate subsistence emissions but reserve room for additional distributive principles. By contrast, 'strong' emissions sufficientarianism offers a complete answer to the right-to-emit question, making sufficiency a necessary condition as well as a sufficient one. In the next section, I argue that we should endorse strong emissions sufficientarianism. Before that, however, it is worth saying a few words about why emissions sufficientarianism has become so popular among climate ethicists in the first place. These reasons hold regardless of whether we endorse a weak or strong version of this view.

Emissions sufficientarianism is attractive mainly because it is supported by two forceful and overlapping arguments, one focusing on people's right to sufficiency and the other on the *pro tanto* wrongness of emitting. The former argument flows from the thought that there are limits to how far anyone can be expected to sacrifice themselves for the sake of others. The idea is that all people have a basic right to protect their fundamental interests, permitting them to prioritize themselves even though it might be better, impartially speaking,

[6]That inequalities (or principles of distributive justice generally) are morally irrelevant above the sufficiency threshold is referred to as the 'negative thesis' of sufficientarianism (Casal 2007). It exposes sufficientarianism to, arguably, its main weakness, namely the 'indifference objection' (Shields 2020). This objection is not relevant to this paper since strong emissions sufficientarianism only relies on sufficientarianism's 'positive thesis'; that is, the claim that it is especially morally important to bring people to a sufficient level of functioning or advantage.

if they were to sacrifice themselves instead. The latter argument starts from the observation that GHG emissions contribute to harm.[7] The thought here is that since emissions have adverse effects on other people, we need a reasonable justification for emitting anyway, and the fact that emissions are required to secure sufficiency seems to offer such a justification (although for weak emissions sufficientarianism, it is not the *only* justification). The two lines of argument are mutually supportive and, together, offer a compelling account of the right to generate subsistence emissions. The idea is that no person should be expected to die prematurely or live a substandard life just because the alternative would inflict some harm or costs on others. Sufficiency has basic moral priority and allows people to engage in acts that would otherwise be morally forbidden.

There is an additional reason to endorse emissions sufficientarianism: this allows for determinate verdicts when deciding whether someone has moral permission to emit, at least when compared to its main rival, *emissions egalitarianism*. Emissions egalitarianism begins by setting an overall limit on emissions, usually referred to as a *carbon budget*. It then states that this budget should be allocated equally between all persons, who are free to use, retire, or transfer their share to others as they see fit (Jamieson 2010; Singer 2002; Torpman 2019; Vanderheiden 2008).[8] This approach seems to make good sense given that the atmosphere's ability to absorb GHGs is a global common to which no one has special claims (Broome 2012, 70).[9] But the problem is that even if we were to accept the idea of setting an overall limit on emissions in the first place – I shall later raise some doubts about the appropriateness of this – we have, at best, a dim idea about how many people are supposed to *share* the budget since this depends not only on procreative choices that are yet to be made but, more importantly, on technological, social, and economic developments that lie in the future.[10] The technological developments, in particular, are key since they profoundly affect the speed of decarbonization, changing the number of people that will exist with an equal claim to the overall emissions budget. But they cannot be predicted with much precision, so a view like emissions egalitarianism ends up being indeterminate. It tells us to share the emissions budget equally, but the number of people in the denominator is unclear.

In response, emissions egalitarians often argue that we should engage in a one-off allocation of *all* remaining emissions to countries in an egalitarian manner and then task each country with saving enough emissions to support future countrymen (Broome 2012, 72–5; Singer 2002; Barry 1997). This manoeuvre initially overcomes indeterminacy because it tells us how to distribute the remaining emissions among countries. However, in addition to the moral qualms we might have about letting procreation depend on the availability of emissions permits, it quickly reintroduces indeterminacy worries once the one-off allocation has been carried out. Once all emissions have been distributed, each country must save emissions to support future countrymen, and the necessary rate of saving will be unclear for the same reason – it depends on the speed of decarbonization.

[7]There is a lively philosophical discussion about whether individual emissions cause harm (see Fragnière 2016 for a valuable overview). I set this debate to one side here, but using the weaker phrase 'contribute to harm' instead of 'cause harm' is supposed to signal that the *pro tanto* wrongness of emitting does not rely on individual emissions being necessary or sufficient for harmful events.

[8]We can distinguish between historical and non-historical versions of emissions egalitarianism depending on whether the right is to an equal share of the 'remaining' or 'total' carbon budget (Matthews et al. 2020). For discussion, see Caney (2012) and Torpman (2019).

[9]Blomfield (2019) points out that this argument overlooks that many GHG emissions are absorbed by terrestrial sinks (e.g., forests), to which some actors *do* have special claims; see also Vanderheiden (2017).

[10]This is admittedly not true for an *open-ended* formulation of emissions egalitarianism, which states that everyone should get to emit the same without putting a cap on overall emissions. Open-ended emissions egalitarianism has other problems, however, such as finding a non-arbitrary way of selecting the level of emitting to which each person is entitled when the numerator is undefined.

Emissions sufficientarianism, to its merit, can avoid these problems.[11] Since this view states that people have a right to emit if doing so is necessary to secure sufficiency, it does not presuppose, for the purposes of assigning rights to emit, an ability to predict deep into the future. Emissions sufficientarianism generally does not care about how much others have emitted, are currently emitting, or will emit but instead focuses on whether, at the time of emitting, the emitter could secure sufficiency using fewer emissions. This raises its own difficulties, for it requires that we not only resolve conceptual questions related to the appropriate definition of sufficiency but also that we can empirically determine which emissions are necessary to meet sufficiency thus understood.[12] But emissions sufficientarianism at least does not build indeterminacy into the very foundation of people's rights to emit like emissions egalitarianism does. This counts in its favour.

Too Strict? A Defense of Strong Emissions Sufficientarianism

So far, I have argued that although emissions sufficientarianism is widely endorsed by climate ethicists, the support is typically reserved for weak emissions sufficientarianism. Weak emissions sufficientarians think that while there is a moral right to generate subsistence emissions, other emissions are also permissible. Strong emissions sufficientarians, by contrast, hold that only subsistence emissions are morally permissible. This is a stark view, but I shall argue that we should endorse it in this section.

Let me begin by noting two important qualifications about my defence of strong emissions sufficientarianism. First, strong emissions sufficientarianism is clearly false if we take it to mean that, literally, all non-subsistence emissions are impermissible. Some emissions are unavoidable in the sense that they are beyond our control.[13] Since 'ought' implies 'can', such emissions are morally permissible no matter what ends they serve. But all theories must recognize that unavoidable emissions are morally permissible for this reason, so we can set them to one side here. When we speak about the right to emit in this context, the assumption is that we are talking about emissions that could be avoided. Hence, strong emissions sufficientarianism should be read as saying that subsistence emissions are the only morally permissible *avoidable* emissions.[14]

Second, strong emissions sufficientarianism is not correct in a timeless sense. The view is only plausible given that climate change is a serious problem that calls for urgent action to reduce emissions. For example, it would be absurd to claim that people acted wrongly in producing non-subsistence emissions in the 1400s, given that anthropogenic climate change was not an issue then. Suppose humanity, for some reason, could keep emitting at current levels much longer without serious negative consequences. In that case, we should still be weak emissions sufficientarians, but we would need other principles to assign most emissions (to the extent these emissions would raise distribution questions).

Even with these qualifications, strong emissions sufficientarianism can appear too strict. Although climate change poses a very grave threat, it is also true that GHG emissions are often generated as a side effect of very beneficial activities, and it is hard to see why beneficial non-subsistence emissions could not at least sometimes be morally permissible. Why not

[11]Emissions sufficientarianism is, however, not unaffected by the peculiar problems posed by the intergenerational character of climate change. See, e.g., Page (2007), Meyer and Roser (2009), Wolf (2009), and Huseby (2019) for various problems associated with applying sufficientarian positions in an intergenerational context.

[12]Gardiner (2010, 17) notes that there are also political downsides to emissions sufficientarianism: actors will be incentivized to adopt an overly ambitious definition of 'subsistence', and those with more ambitious definitions will have an incentive to demand that others refrain from adopting similar definitions. For the cultural variability of 'subsistence emissions' and its potential problems, see Duus-Otterstrom (2023).

[13]Hiller (2011) mentions flatulence, but a less flippant example is water vapour. Water vapour has a strong greenhouse effect, but for any level of global warming, there is little humans can do to influence the concentration of water vapour in the atmosphere (IPCC 2021, 1526).

[14]The set of all subsistence emissions may partially overlap the set of all unavoidable emissions, but the key thing about subsistence emissions is that people *should not* be expected to refrain from them, not that they literally could not do so.

allow, for example, emissions which, although not essential, lead to very pleasurable experiences or high living standards?

One possible response is that climate change has already gotten bad enough to make the notion of permissible inessential emissions implausible. This is the view defended by Lukas Tank (2022,5), who believes, 'Even now, we must expect every significant quantity of luxury emissions to cause grave harms by worsening climate change.' He concludes that we must immediately avoid all emissions except subsistence emissions.[15] We may call this the *depleted margins* argument since it stresses that humanity has no safe emissions left.

The depleted margins argument is controversial. There is, for example, still a chance that humanity will manage to keep warming to 2 or even 1.5 degrees Celsius while producing some non-subsistence emissions. A warming of 1.5 or 2 degrees Celsius would have very negative consequences, but it is an open question whether these would be serious enough to condemn all non-subsistence emissions, as strong emissions sufficientarianism suggests. Relying on the view that the safe margins for emitting have already been thoroughly depleted would put strong emissions sufficientarianism on an insecure footing.

There is, however, a much more robust defence of strong emissions sufficientarianism. We can defend this view by merely adding some epistemic uncertainty to the basic priority of subsistence, which most commentators already accept. I refer to this as the *precautionary argument* for strong emissions sufficientarianism. The argument begins by drawing on the same intergenerational uncertainty discussed at the end of the preceding section. It points out that, because we have a limited idea about how the future will develop technologically, socially, and economically, we simply do not know how long it will take humanity to decarbonize. Perhaps decarbonization is achieved in a couple of decades; perhaps it will take much longer. Importantly, this implies that we do not know *what the total number of subsistence emissions will be*. We do not know how many people will need to produce GHG emissions to secure basic needs or fundamental interests, nor do we know how many emissions these people will require.

The precautionary argument continues by pointing out that, for an emissions sufficientarian, we are presently facing uncertain decision making. We know that we ought to prioritize subsistence emissions, but we do not know how many subsistence emissions there will be. This implies that we must be highly conservative in our emissions choices. Since emissions might remain necessary for reaching sufficiency for a long time, and since reaching sufficiency should be given priority, we must ensure that future people can exercise their right to produce subsistence emissions without bringing about very dangerous climate change. We should not produce inessential emissions since this might infringe on future people's opportunity to make essential emissions.

Someone might object that this argument seems to assume that there is a natural limit to how many GHGs humanity can emit. Since there is no such limit – at least not a practically relevant one – we might wonder in what sense current people can 'rob' future people of their right to produce subsistence emissions. If it turns out that future people must still emit GHGs, they can, and presumably will, do so, regardless of how much previous generations emitted (Bowman 2014). But this objection overlooks the fact that the precautionary argument speaks about reserving room for people to produce subsistence emissions 'without bringing about very dangerous climate change'. The argument does not deny that future people can *generate* subsistence emissions no matter what we in the present generation do. It says we might rob them of the opportunity to do so *without disastrous environmental consequences*. The thought is that it would be wrong to risk imposing on future people the tragic choice between sacrificing themselves and contributing to very dangerous climate change. Put differently, we should emit in a fashion that improves the chances that future people will not find themselves having to choose between protecting their own sufficiency and frustrating other people's sufficiency. Climate change may turn out to be

[15]Tank (2022, 7) makes an exception for what he calls 'transition emissions'.

very harmful anyway, but we should at least make sure that our emissions do not deplete, for inessential reasons, future people's opportunity to generate subsistence emissions without making the problem worse.

To my mind, this amounts to a powerful argument for strong emissions sufficientarianism. It is worth stressing that the argument does not say that non-subsistence emissions are necessarily impermissible. It operates *ex ante*; that is, before we know how the decarbonization process will play out. According to the precautionary argument, what is wrong is emitting in a way that imposes an unjustified risk of a tragic choice, where a risk is understood as 'unjustified' when imposed for inessential reasons. This is consistent with the possibility that non-subsistence emissions might impose no tragic choices on future people because decarbonization will occur much quicker than expected or because negative emissions technologies will be deployed on a massive scale.

Is there a more precise way to state the decision rule on which the precautionary argument relies? The argument clearly rules out making optimistic assumptions about decarbonization. It categorically rejects, for example, adopting a best-case scenario for humanity's process of weaning itself off GHGs. But, more relevantly, the argument also rules out adopting a most likely case of decarbonization. It implies that the present generation should assume a pessimistic scenario since this guarantees that opportunities to generate subsistence emissions are not squandered for inessential reasons. *How* pessimistic the scenario should be is an open question. It is tempting to think that the worst-case scenario should be adopted, but the risk is that this ends up implying that people ought to have avoided all non-subsistence emissions ever since they had reason to suspect that there was such a thing as anthropogenic climate change. Suffice to say, the present generation should assume that decarbonization will be *hard* to attain. Note that the degree of pessimism in one sense does not matter since no generation can be expected to forego securing its own sufficiency for the sake of others. The difference between pessimistic and extremely pessimistic scenarios is unlikely to make a difference once we bear in mind that the right to sufficiency acts as a floor for each generation's duty.

Saying that decarbonization will be hard to attain and that the present generation should restrict themselves to subsistence emissions does not contradict the fact that other decision rules will make sense once the decarbonization process becomes clearer. Suppose that decarbonization goes well and that, by mid-twentieth century, it looks virtually certain that humanity will be able to meet an appropriate climate target (two degrees warming, say). It would then be implausible to conclude that people must nevertheless avoid all inessential emissions on the grounds that there is a tiny but non-zero probability that future people will be put in a tragic choice – this would give an outsized moral weight to avoiding the risk of imposing the tragic choice. But the precautionary argument is nevertheless plausible when, as is currently the case, there is a significant risk that climate targets will not be kept and that it will, at some point, be impossible to generate subsistence emissions without contributing to very dangerous climate change.

The implications of strong emissions sufficientarianism for the present generation's duty depend on how the sufficiency threshold is fleshed out. Suppose we endorse the view that everyone is entitled to a comfortable standard of living as a matter of sufficiency. In that case, the implications are not very radical, considering that what must then be given up are 'luxuries' (Shue 1993). If, on the other hand, we equate sufficiency with barely scraping by, then strong emissions sufficientarianism will look more radical, requiring us to forego many of the things we now take for granted. But the flip side is that more minimal conceptions of sufficiency also impose a greater urgency on the present generation not to jeopardize future generations' opportunities to reach sufficiency. For that reason, strong emissions sufficientarianism is more plausible when it is tied to basic needs. Basic needs better explain why people are morally permitted to contribute to harmful climate change and why denying future people the opportunity to secure their sufficiency without disastrous environmental consequences would be seriously wrong.

Some might persist in finding strong emissions sufficientarianism too strict, but then the challenge is to explain why. The precautionary argument relies on two major premises: that subsistence emissions take strong priority over other kinds of emissions and that it is unclear how many subsistence emissions there will be. The former premise is widely shared and quite plausible. The latter, meanwhile, seems almost impossible to deny, at least when decarbonization remains a distant prospect. Therefore, the challenge for those who wish to deny strong emissions sufficientarianism is to avoid the conclusion of the precautionary argument without disputing either of these premises. The most obvious option is, perhaps, to pursue what we might call the 'economic chaos response'. The thought here is that strong emissions sufficientarianism entails a sudden and very detrimental economic shock to the economies of the world and that, rather than banning all emissions except subsistence emissions, we should pursue a more gradual policy which balances 'the risk to the economy against the prospective benefits to be achieved by reducing emissions' (Wolf 2009, 372). But the economic chaos response rests on a false conflict: if emissions are needed to avoid economic harms that would jeopardize people's sufficiency – and such harm is almost certainly at stake if we were to imagine a very rapid and deep reduction in emissions – then these emissions would be subsistence emissions and hence be permissible according to strong emissions sufficientarianism. The economic chaos response does not give us much reason to reject strong emissions sufficientarianism. In general, any response that stresses the harmful consequences of adopting strong emissions sufficientarianism is unpromising since the 'harmful consequences' will threaten people's sufficiency if they are serious. We fail to see this because we make the mistake of equating subsistence emissions with the direct emissions of the poor as opposed to emissions necessary to satisfy someone's basic needs or fundamental interests (Duus-Otterstrom 2023).

The remaining option is to question strong emissions sufficientarianism on partial-compliance grounds. Suppose some choose not to limit themselves to subsistence emissions. In that case, it seems objectionably strict to demand that others limit themselves to subsistence emissions. In a world where some produce many luxury emissions, the claim that we would act wrongly in not keeping our own emissions to a minimum may seem exaggerated.

The partial-compliance objection does not speak against strong emissions sufficientarianism as an 'ideal' view that assumes general compliance.[16] Still, it does raise a natural fairness-based worry one might have about this principle, and it is worth noting that there is a related and, perhaps, more robust version of the objection that draws on historical rather than contemporary unfairness. The thought here is that even if everyone were to refrain from non-subsistence emissions *moving forward*, this would not address the problem that a disproportionate number of non-subsistence emissions were produced by some people in the past. We might think that rather than expecting everyone to keep their emissions to a minimum, past 'under-emitters' should be able to 'over-emit' to correct this unfairness.

The partial-compliance objection rests on understandable concerns, but it is problematic because, if emitting contributes to risks of serious harm, it is far from obvious that the non-compliance of others weakens our obligation not to emit. Instead, it looks as though we ought to avoid emitting regardless of whether others do the same.[17] Caney (2014) puts this in terms of 'harm-avoidance justice' taking priority over distributive fairness when the stakes are high. Similarly, several theorists have argued that if some exceed their fair share of emissions, this generates a duty on the part of others to 'take up the slack' and emit less than their original fair share precisely because serious harm or human rights are at stake (Roser and Hohl 2011; Schwenkenbecher 2013). Emissions sufficientarians can draw on these arguments and say that

[16]My usage of 'ideal' and 'non-ideal' theory follows Rawls' (1999, 8) compliance-focused account. The terms have taken on additional meanings (Valentini 2012).

[17]The analysis would be different if it were *pointless* to refrain from emitting. But remember, I am speaking about emissions which 'contribute to risks of serious harm'.

others' excessive emissions – whether past or present – do not permit one to generate excessive emissions. Such emissions are objectionable because they value distributive fairness over people's right to sufficiency.

Emissions Sufficientarianism is too Permissive

I have argued that far from being too strict, strong emissions sufficientarianism offers a plausible account of moral rights to generate GHG emissions once we consider the intergenerational uncertainty surrounding the total number of subsistence emissions. In this section, I address the objection that emissions sufficientarianism is, instead, too *permissive.* This objection's gist is that not even sufficiency is enough to ground a right to contribute to climate change in some circumstances. I argue that strong emissions sufficientarianism has the resources to accommodate this 'permissiveness objection'. Note that the permissiveness objection targets emissions sufficientarianism in general and not only the strong version of this view. However, since the objection holds that not even subsistence emissions are permissible in some situations, it is reasonable to assume that the objection will have a greater problem with weak emissions sufficientarianism than its strong counterpart. If we think that limiting climate change is the overriding concern, we will believe that strong emissions sufficientarianism is a step in the right direction, even though it is not restrictive enough.

To understand the permissiveness objection, it is helpful to note that emissions sufficientarianism is in tension with carbon budgets, at least when these are understood in a permissions-entailing sense (Tank 2022).[18] Permissions-entailing carbon budgets put an upper limit on permissible emissions. This is something emissions sufficientarianism has difficulties accepting since, for any carbon budget, there might be some need to emit after the budget is depleted.[19] In such situations, emissions sufficientarianism will say that it is morally permissible to exceed the budget. While limiting dangerous climate change is very important, and we should work hard to decouple human sufficiency from the need to emit GHGs, this does not justify putting a hard cap on the number of emissions.[20]

The fact that emissions sufficientarianism does not respect carbon budgets can seem like a feature rather than a bug. There is little to suggest, for example, that the 1150 $GtCO_2$ budget (which is supposed to make it likely that warming is limited to two degrees) has the sort of moral significance that would make the first ton of CO_2 exceeding the budget impermissible. But there is a difference between dismissing this particular carbon budget and dismissing the notion of carbon budgets in general. The permissiveness objection maintains that because emissions sufficientarianism will allow any number of subsistence emissions, it is simply incapable of *limiting* climate change to an adequate degree. To see the problem, consider the following hypothetical case:

> *Tipping Point.* Climate change is nearing a significant tipping point, such that further emissions would irrevocably force the climate system into a qualitatively new and very dangerous state. Some people, however, must still emit if they are to secure a sufficient level of functioning or well-being. Call these people 'Group A'. If Group A produce these subsistence emissions, then the tipping point will be crossed. This situation is known to all.

To make the case clearer, suppose there is no feasible way to offset or adapt to the emissions. Sink capacity cannot be enhanced to prevent the emissions from increasing the atmospheric con-

[18]Understood in a *descriptive* sense, carbon budgets merely state the probability of exceeding an average temperature increase given a particular level of cumulative emissions (IPCC 2021, 2220). Emissions sufficientarianism has no problem using such budgets to set mitigation goals or plan for the future.

[19]Unless the budget is defined (unorthodoxly) as the sum of all subsistence emissions.

[20]On the importance of decoupling human sufficiency and GHGs, see, for example, Hayward (2007) and Shue (2019).

centration of GHGs, and the new state of the climate system would unavoidably lead to many people being harmed.[21] The permissiveness objection states that since emissions sufficientarianism defends the moral right to produce subsistence emissions, it implies, problematically, that it would nevertheless be permissible for Group A to cross the tipping point.

Let me start by acknowledging that discussing the permissibility of subsistence emissions is awkward, considering that climate change was largely brought about (and continues to be driven) by inessential emissions associated with affluence. But the point here is not to deny that subsistence emissions are morally innocent compared to other emissions. Rather, the worry raised by the permissiveness objection is that climate change might become so serious that *not even* subsistence emissions are permissible. Duly noting this point, suppose we believe it would be impermissible for Group A to emit in the tipping point example. Can emissions sufficientarianism be squared with this intuition?

There is reason to think so. The key observation is that a concern for people's sufficiency speaks in favour of limiting climate change just as much as it grounds, presently and for most people, a right to emit some GHGs. Climate change threatens, for example, people's lives, health, and livelihoods (Caney 2010). Once we bear these harmful effects in mind, we cannot say that a concern for sufficiency automatically and unproblematically leads to moral permission to produce subsistence emissions. Instead, it seems as though climate change gives rise to a conflict between different people's sufficiency interests, which need to be navigated. Given this, there are several responses available to emissions sufficientarians to explain why Group A's right to emit is at least not obvious.

First, emissions sufficientarianism might hold that the right to secure sufficiency is not *absolute*. Rights-based views typically concede that there are situations in which rights are suspended for the sake of avoiding extremely bad consequences.[22] Indeed, even Robert Nozick, a rights fundamentalist in many ways, admits that rights may be violated to prevent 'catastrophic moral horror' (Nozick 1974, 30).[23] Adopting a clause of this kind is necessary for the plausibility of right-based views since defending rights at any imaginable cost would be absurd. Emissions sufficientarianism can, accordingly, state that the right to produce subsistence emissions may be suspended in extreme cases. If crossing the tipping point is such a case, Group A is not morally permitted to emit after all. They must sacrifice their own sufficiency for the sake of the rest.

Second, moving beyond extreme cases where normal rights and duties are suspended, the sufficiency interests threatened by Group A's emissions might be *more profound* than the sufficiency interests these emissions would secure. Recall that some people think sufficiency means the same as a decent life. These people will presumably agree that, although sufficiency is rather demanding, some elements of sufficiency are more basic than others and hence take moral priority. It is plausible, for example, that it is more morally important that people do not die prematurely rather than they are content or enjoy a comfortable standard of living. So, emissions sufficientarians could say that if Group A's subsistence emitting would secure a less important element of sufficiency than it would frustrate for others, then these emissions would not be morally permissible. Henry Shue (1993,56) famously writes, '[I]t is not equitable to ask some people to surrender necessities so that other people can retain luxuries.' The same logic can be applied to say that some people's survival interests should not be sacrificed for other people's interests in achieving a decent living standard.

Third, the affected groups may be of unequal *size*. More specifically, Group A might be smaller than those suffering the adverse effects of crossing the tipping point. If so, their claim to secure

[21]This assumption is crucial since there may be ways to make up for having emitted such that the emissions do not contribute to climate change or do not contribute to climate harm. As I argue in Duus-Otterstrom (2023), the fact that people are morally permitted to produce subsistence emissions does not preclude that they might have a duty to make up for these emissions by, for example, offsetting them.

[22]Such views are sometimes called 'threshold deontological' (Moore 2018).

[23]To be precise, Nozick skirts around the issue, but the fact that he mentions it is telling.

sufficiency for themselves might be outweighed by the aggregated harm this would inflict on others. This response may look odd, considering sufficientarianism is famously opposed to aggregation when comparing claims over and below the sufficiency threshold. Sufficientarianism denies that benefits to many well-off individuals can outweigh benefits to the badly off. However, sufficientarianism typically embraces aggregation *under* the threshold (Crisp 2003, 758). This view can say, for example, that it is just to minimize the total shortfall from sufficiency across a whole population (Huseby 2019, 15). Aggregation under the threshold would suggest that even if the interests at stake for both groups are equally important, Group A would not necessarily have a right to cross the tipping point if Group B is more numerous than Group A.

Fourth, even if we think that none of the above means that Group A lacks a right to emit, this does rule out that others might be permitted to prevent them from *exercising* this right. More specifically, the right in question may go from a *claim right* to a *mere permission* (Applbaum 2010, 219). The distinction here is that whereas a claim right to perform an act φ entails a duty on the part of others not to interfere with a person's φ-ing and, perhaps, a duty to help her φ, a mere permission leaves open that others may seek to interfere in various ways. A famous example is two shipwrecked sailors struggling over a single plank of wood at sea (Ghanayim 2006). Here, it is standard to argue that since both sailors are morally permitted to struggle for the plank, their right to use it is a mere permission. The account of moral permission employed in this paper has been a claim right in the sense that it would be unjust to prevent people from producing the emissions they need to reach sufficiency, but it is also possible that the permission can be downgraded to a mere permission. If Group A's right to produce subsistence emissions is a mere permission, others may permissibly seek to stop them from doing so – at least if they use appropriately constrained means. This possibility blunts the permissiveness objection because it shows that a *permission* to emit need not translate to *emissions*, even if the actors holding the permission wish to act on it.

Several responses are thus available for emission sufficientarians if they wish to qualify for the right to generate subsistence emissions. This, in turn, means that the permissiveness objection is mistaken, not in the sense that it is unthinkable that the right to produce subsistence emissions gives way, but because emissions sufficientarianism has internal resources to reach the same conclusion. It is worth repeating that strong emissions sufficientarianism seems to accommodate the permissiveness objection better since it, at least, rules out that very harmful inessential emissions can be permissible.

Of course, the four responses discussed above do not rule out that emissions sufficientarianism might end up endorsing a moral permission to generate very dangerous climate changes in some situations. While this may or may not seem problematic, it is worth noting that the permissiveness objection is arguably a worse problem for other views. To see why, consider the following variation of the *Tipping Point* example:

> *Affluent Crossing.* Climate change is nearing a significant tipping point, such that further emissions would irrevocably force the climate system into a qualitatively new and very dangerous state. Some people, however, must still emit if they are to keep up an affluent lifestyle. Call these people 'Group A*'. If Group A* produce these emissions, then the tipping point will be crossed, resulting in great harm to others. However, Group A* have emitted virtually nothing in the past and are thus well within their 'fair share'. This situation is known to all.

Here, strong emissions sufficientarianism will say – plausibly, in my mind – that it would be impermissible for Group A* to produce these emissions. Emissions egalitarianism, however, seems to say the opposite, considering that Group A* has not used its share of the carbon budget. This invites a different and arguably worse version of the permissiveness objection since, as noted above, we might feel that the duty to prevent harm takes priority over considerations of

comparative fairness (Caney 2014). Weak emissions sufficientarianism is potentially vulnerable to the same problem since it does not categorically prohibit non-subsistence emissions.

Conclusion

I have argued that strong emissions sufficientarianism provides a plausible account of people's moral right to emit GHGs. It strikes a reasonable balance between thinking that limiting climate change is very important and that the cure must not be worse than the disease. There was a time when endorsing the weak version of emissions sufficientarianism made perfect sense, but since humanity has not acted promptly enough in responding to the climate problem, there is less and less room for considerations other than sufficiency. Once we take seriously that the total number of subsistence emissions is uncertain, there are strong precautionary reasons to avoid generating non-subsistence emissions.

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