

ARTICLE

Subsistence Emissions and Climate Justice

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Abstract

The climate justice literature typically endorses a moral right to produce subsistence emissions, but this right appears problematic considering how urgent it has become to reduce all emissions. It seems that we are currently facing a dilemma between respecting people's right to subsistence and keeping emissions within a reasonably safe budget. This article argues, however, that there is no reason why a moral permission to produce subsistence emissions must be accompanied by an exemption from responsibility. Even when we are dealing with subsistence emissions, we can demand that people correct for having emitted if they can do so without jeopardizing their own vital interests. This reduces the tension between the right to produce subsistence emissions and avoiding very significant climate change. If many emitters offset their subsistence emissions or contribute to adaptation and compensation because of them, the negative consequences of recognizing this right are tempered when it comes to both mitigating climate change and responding to its adverse effects.

Keywords: climate change; climate justice; compensation; greenhouse gas emissions; subsistence

If humanity is to avoid very dangerous climate change, total greenhouse gas (GHG) emissions must be capped. This raises an important ethical question: how should the remaining emissions be allocated? Ever since the publication of Henry Shue's (1993) article 'Subsistence emissions and luxury emissions', the concept of subsistence emissions has been central in academic discussions about this question. Shue introduced¹ this concept in criticizing the idea that emissions should be cut where the economic costs would be the lowest. Shue's argument was that such an approach, while economically efficient, would be grossly unjust because it would ignore 'the fact that some sources [of emissions] are essential and even urgent for the fulfillment of vital needs and other sources are inessential or even frivolous' (Shue 1993, 55). If we are to allocate whatever is left of the carbon budget in a just way, he maintained, we must recognize such 'qualitative' differences among emissions and give strong if not absolute priority to emissions that are essential for 'survival or decency' (Shue 1993, 55).

Shue's argument has been widely accepted by theorists of climate justice, who have concluded that there is a moral right to generate subsistence emissions (see, for example, Baer et al. 2010; Caney 2009; Vanderheiden 2008). Yet, the argument is subject to a lingering worry, which is that such a right appears incompatible with keeping emissions within an overall emissions ('carbon') budget (Gardiner 2004; Hayward 2007). This was not as much of an issue when Shue wrote

¹As Shue (2019, 251–2) notes, he was drawing on earlier work by Agarwal and Narain (1991), as well as on his path-breaking book *Basic Rights*, in which Shue (2020 [1980], 23) argued that subsistence rights – the socially guaranteed enjoyment of 'unpolluted air, unpolluted water, adequate food, adequate clothing, adequate shelter, and minimal preventive public health care' – are a precondition for enjoying other rights.

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his path-breaking article, as the climate problem was less urgent then. Indeed, while Shue could by no means be accused of complacency, he could afford to endorse an increase in per capita emissions by the ‘poor majority’ (Shue 1993, 50). Now that the climate situation has become considerably worse and the scientific understanding of the cumulative nature of climate change has matured, the tension between capping overall emissions and a moral right to produce subsistence emissions is, however, plain for all to see. The Intergovernmental Panel on Climate Change (IPCC 2021) estimates that in order for humanity to have a good chance of limiting warming to under 2 °C, total emissions must reach net zero by 2050, followed by a period of net-negative emissions. It is far from obvious that this aim can be met while honouring a right to produce even subsistence emissions because these emissions alone might, depending on the negative emissions technologies available, be enough to exceed the remaining carbon budget (Smith et al. 2015).²

The worsening empirical circumstances have not, of course, changed the reasons that spoke in favour of positing a moral right to produce subsistence emissions in the first place – roughly, that each person has a right to advance their basic interests, even when doing so imposes costs on others. They do suggest, however, that we might now be facing a dilemma between respecting people’s right to produce subsistence emissions and avoiding even worse climate change. To be sure, this dilemma is not impossible to resolve. As Shue (2014, 319–39; Shue 2019) notes in later work, it would be resolved if everyone had access to abundant green energy, for this would allow people to secure decent lives without burning fossil fuels. However, this is a long-term solution, which does not tell us much about what to do when the link between GHG emissions and subsistence is still there. People presently rely on fossil fuels to cover at least some of their energy needs and look likely to do so for the foreseeable future – certainly longer than the few decades humanity has left to achieve something like the 2 °C target. This raises the question of what we should do when the deep decarbonization that would truly solve the problem is yet to be achieved. Should we recognize a right to produce subsistence emissions and thus to contribute to dangerous climate change? Or, should we rather qualify or abandon the idea that people are morally permitted to produce even subsistence emissions now that an environmental disaster that itself threatens the vital interests of countless people is around the corner?

These are uncomfortable questions. However, as I show in this article, the tension between the right to produce subsistence emissions and avoiding very dangerous climate change is luckily not as great as one might think. This is because there is no reason why a right to *produce* subsistence emissions must translate into an *exemption* from duties to combat climate change. In fact, as I shall argue, on the sufficientarian morality that underlies the right to produce subsistence emissions, the only emitters who should be exempt from a duty of correction (a duty to make up for a previously harmful act) are those whose vital interests would be frustrated by correcting. This significantly reduces the conflict between the right to produce subsistence emissions and mitigating, or at least responding to, climate change, as it means that for a share of total subsistence emissions, there will be emitters that could be held responsible. I argue, then, that the debate has been based on an incorrect premise. While it is true that we can only resolve the conflict between the right to subsistence and climate change through the sort of green energy revolution that Shue envisions, the present situation looks worse than it is because it is erroneously assumed that people must be exempted for emitting what they need to survive or to lead decent lives. There is an environmental price of recognizing the right to subsistence, but it is not as steep as one might think.

The article is structured as follows. The second section offers a conceptual analysis of subsistence emissions. It argues that emissions are ‘subsistence emissions’ whenever they are the

²Obviously, other emissions are a greater problem. The reason I focus on subsistence emissions is that such emissions might be enough to overshoot the budget even in the unlikely event that all other emissions are eradicated. I fully accept Shue’s (2014, 6–7) contention that ‘the last emissions that ought to be restricted are emissions that are vital to the production of the basic necessities of subsistence’.

minimum amount needed to satisfy vital interests. Thus, it rejects defining subsistence emissions in terms of the emitter's level of economic development. The third section contains the core normative argument. It begins by disentangling the 'permissibility claim' and the 'exemption claim' about subsistence emissions. The former states that people have a moral permission to produce subsistence emissions; the latter makes the further claim that no one should be *held responsible* for having produced such emissions. The section then proceeds to attack the exemption claim. The problem with this claim, it is argued, is that people may have a 'qualified' (as opposed to an 'unqualified') moral permission to perform an act and thus owe correction for performing the act. The section concludes by arguing that those who can correct for their subsistence emissions without compromising their vital interests have a duty to do so (that is, their permission to produce subsistence emissions is 'qualified'). The fourth section expands on the duties of correction. It argues that people can at least partially correct for having emitted by offsetting emissions, contributing to adaptation, or compensating climate victims. The fifth section considers some objections to the argument, including the objection that individual emitters cause no harm. Finally, the sixth section offers a brief conclusion.

Subsistence Emissions

Before we can *discuss subsistence* emissions from a normative perspective, we must first understand what they are. There is no canonical definition in the literature, but I propose the following definition:

Subsistence emissions: Emissions are subsistence emissions if, and only if, (1) the emissions satisfy a vital interest and (2) at the time of emitting, there is no reasonable alternative way of satisfying this vital interest using fewer emissions.

The two components are individually necessary and jointly sufficient. The first reflects that subsistence emissions are connected to the constituents of a basic moral minimum. What this involves exactly is open to debate, and theorists accordingly end up describing subsistence emissions in different ways: Shue (1993, 55) talks about emissions that are 'essential ... for either survival or decency', Simon Caney (2009, 138) about 'emissions required for [persons] to attain a minimal decent standard of living' and Steve Vanderheiden (2008, 243) about 'emissions sufficient to allow for ... basic human functioning'.³ Finally, opting for a somewhat eclectic approach, Dominic Roser and Christian Seidel (2017, 144) describe subsistence emissions as 'emissions required for survival, for a minimally decent life, for meeting the most important basic human needs, and to ensure that human dignity and human rights are respected'. The core idea, however, is the same, which is that subsistence emissions help produce⁴ what a person needs to stay above, to use Shue's (2020, 18) memorable phrase, 'the line beneath which no one is to be allowed to sink'. I capture this by saying that subsistence emissions satisfy (protect or promote) *vital interests*. It is important to stress that 'satisfaction' here refers to reaching an *adequate* level of interest fulfilment (Griffin 1986, 51). It would be a mistake, for example, to think of emissions associated with gluttonous overeating as subsistence emissions just because food is a vital interest. Only emissions that go into being adequately nourished are subsistence emissions.

The second component adds that there must be no alternative involving fewer emissions. This is critical because it allows us to rule out emissions that could be avoided while satisfying vital interests. As Shue and others have argued, the reason GHG emissions are connected to vital

³Vanderheiden (2008) refers to 'survival emissions', but this is because he adopts a narrow theory of vital interests (more on which later).

⁴Here and elsewhere, I use 'produce' in a loose sense. People often only indirectly give rise to emissions, for example, by consuming goods and services that embody emissions. I shall say that such emissions are 'produced' by them.

interests is predominantly to do with energy. Emitting GHGs does not satisfy any vital interest in itself, but is only a means to things like transportation, electricity and heating (Hayward 2007; Shue 2019). It follows that if we could get adequate access to energy without emitting any GHGs at all, then there would be no subsistence emissions related to energy. It would not matter if our emissions would, *in fact*, power essential activities, for they would not be *necessary* for these activities. Emissions only count as subsistence emissions if they are the minimum amount needed to satisfy vital interests.

The alternatives condition is subject to an overdemandingness constraint, though, which is why the definition refers to ‘reasonable alternative ways’. The idea is that emissions might count as subsistence emissions even though, strictly speaking, one could satisfy vital interests without producing them. This would occur when the emissions satisfy a vital interest and avoiding these emissions would be unreasonably costly. An example of this is to expect someone living in a remote area never to take the car. While it is conceivable that such a person could satisfy all their vital interests by using a bicycle, to expect this of them might simply be too much. If so, at least some of their emissions stemming from driving would count as subsistence emissions, even though they were not literally necessary for satisfying vital interests.⁵

It is sometimes claimed that the concept of subsistence emissions is not precise. Roser and Seidel (2017, 176), for example, note that while no one doubts that ‘the emissions of a bus ride ... undertaken by a person in extreme poverty in search of work’ are subsistence emissions, things are much less clear when it comes to ‘an intercontinental flight to celebrate a brother’s wedding’. They conclude that the ‘boundary between subsistence emissions and luxury emissions is less clear than it may appear at first sight’ (Roser and Seidel 2017, 176). However, it is important to see that the reason why the boundary is unclear is that it is unclear which *interests* are vital. We struggle to classify the emissions stemming from flying to a brother’s wedding not because the concept of subsistence emissions is vague or ambiguous, but because we are unsure about whether attending central family events is important enough. The concept of subsistence emissions cannot resolve such questions. This is instead the job of a prior theory of vital interests, upon which the concept of subsistence emissions supervenes.

When it comes to theories of vital interests, the main debate is between *survival-based* views, which restrict vital interests to enjoying a life of average length without serious physical or physiological impairment, and *decency-based* views, which state that our vital interests are to lead a minimally good life.⁶ The choice between these views matters hugely for how permissive our account of subsistence emissions becomes. For example, whereas the survival-based view will reject that flying to a brother’s wedding produces subsistence emissions, decency-based views will say the opposite insofar as it is part of a minimally good life to be able to attend central family events. Here, however, I shall stay neutral between these views, as the argument I offer does not rely on a particular list of vital interests.

Let me end this conceptual analysis by stressing four further points. First, the popular distinction between subsistence emissions and luxury emissions really is too crude. Just because emissions are not necessary for satisfying vital interests, that does not mean that they serve sheer pleasure, as the term ‘luxury’ suggests. For example, though neither is a source of subsistence emissions, there is a recognizable moral difference between taking one’s SUV for a joyride and using it to pick up one’s child at school instead of taking the bus. The relevant distinction should be between subsistence emissions and *non-subsistence* emissions, where the latter can be placed on a ramp of increasing frivolousness.

⁵As this example shows, it is important not to conflate subsistence emissions with unavoidable emissions. Many, if not all, subsistence emissions are, at least in a literal sense of the word, avoidable, but the relevant point is that people *should not* be expected to avoid them.

⁶For valuable discussions of the two types of theory, see Miller (2007), Baatz (2014), Brock and Miller (2019) and Mancilla (2019).

Secondly, there is no reason to think that what counts as subsistence emissions will be the same across all societies. As Christian Baatz (2014) has noted, once a society develops in a carbon-intensive way, it may lock in GHG emissions that other societies are able to avoid. For example, in societies based on private motoring, the emissions of one's car are more likely to be a source of subsistence emissions than in societies with a built-out public transport system. What explains such variance, however, is not that the vital interests are different as much as it is that the 'satisfiers' of these interests are different (Gough 2015). People in car-based societies need to emit more not because they have different vital interests compared to others, but because it takes more emissions for them to *satisfy* their vital interests (in this case, to achieve an adequate level of mobility).

Thirdly, for the purposes of determining whether emissions are subsistence emissions, it does not matter if the need to emit could have been avoided. Shue (2014, 89–108) notes that many emissions are 'avoidable necessities', in the sense that they are only needed because the current energy regime happens to rely on fossil fuels. However, the fact that some emissions could have been unnecessary if different choices were made, or would become unnecessary with the right reforms, is irrelevant for whether they are subsistence emissions *now*. Avoidability is critical for attributing blame and prospective responsibility, but it does not affect whether emissions are needed to satisfy vital interests at the time of emitting, which is the necessary and sufficient condition for subsistence emissions.

Fourthly, subsistence emissions are not exclusive to the poor. It is likely that virtually everyone produces subsistence emissions to some degree (Baatz 2014; Shue 2014, 197–8). This point can seem strange considering that the concept of subsistence emissions is usually raised in relation to poverty and economic development. However, what matters is whether emissions are necessary to satisfy vital interests, and while the vast majority of rich people could no doubt satisfy their vital interests using much fewer emissions, it is unlikely that they could do so without emitting anything at all under the current circumstances. Hence, a fraction of their emissions are subsistence emissions.

There is admittedly an alternative definition that does apply exclusively to the poor. This definition equates subsistence emissions with the emissions produced by those who live at, or below, the level of economic subsistence. However, this definition assumes that poor people never emit GHGs for inessential reasons and that rich people never emit for essential reasons. Moreover, it does not capture the point that it matters whether there are reasonable alternatives involving fewer emissions. The definition implies that even if poor people had access to abundant renewable energy free of charge, they would still be producing subsistence emissions if, for some reason, they chose to burn coal instead, which is absurd. The poverty-centred definition should thus be rejected. What drives the intuitive support for it is the belief that poor people should not be *held responsible* for their emissions, but as I shall now explain, this is an idea that we can retain without asserting that subsistence emissions are uniquely and necessarily tied to the poor.

Rejecting the Exemption Claim

Having defined subsistence emissions, let us now consider their moral importance. What are the normative consequences of the fact that emissions are of the subsistence variety? One answer connects to moral permissibility. Call this 'the permission claim':

The permission claim: People are morally permitted to produce subsistence emissions.

The permission claim is widely shared and highly plausible. It stems from the thought that there are limits to the costs we can expect people to absorb for the sake of others, even when it comes to acts that are harmful and, in principle, avoidable (Tadros 2011, 127–38). We might admittedly

wonder whether people really are morally permitted to satisfy their vital interests when doing so comes at the price of frustrating other people's vital interests, which is true for climate change. The answer is probably that the moral permission depends on a more fine-grained assessment of the weight of the interests on both sides of the equation, such that people are sometimes, though not always, permitted to produce subsistence emissions.⁷ As a general matter, though, the permission claim seems sound enough, and I shall not say more about it beyond assuming that some (and possibly very many) subsistence emissions are morally permitted despite the fact that they frustrate, through a worsening of the climate, the vital interests of others.

Some, however, ascribe a further normative power to subsistence emissions. Narasimha Rao and Paul Baer (2012, 659), for example, write that subsistence emissions constitute 'a morally justified threshold for exemption from mitigation burdens'.⁸ Vanderheiden (2008, 243) argues that 'assessments of liability' cannot be made against those who emit subsistence emissions because 'all persons have valid claims to emit GHGs up to the survival threshold'. Daniel Burkett (2021, 2), finally, claims that 'we should be exempt from moral responsibility for [subsistence emissions]'. These authors endorse what we may call 'the exemption claim':

The exemption claim: People have no moral responsibility for producing subsistence emissions.

'Moral responsibility' should here be understood as having a moral obligation to shoulder some burden or pay some cost. The exemption claim thus states that people have no moral obligation to shoulder burdens or pay costs because of producing subsistence emissions. Those who only produce subsistence emissions should not carry any responsibility at all for emitting, while those who produce both subsistence and non-subsistence emissions should be exempt from responsibility for the former. It is important to note that the exemption claim is advanced against the backdrop of a conception of climate justice according to which actors may rightly be held responsible for having emitted. If we reject this conception, there is nothing morally distinctive about producing subsistence emissions when it comes to allocating costs or burdens.

The exemption claim may look convincing at first glance, but it should be rejected. The problem is that people can and often do have a duty to make up for emitting even though emitting was morally permissible. In fact, as I shall argue, on the sufficientarian morality that underpins the permission claim, the only emitters that should be exempt from this duty are those whose vital interests would be frustrated if they were to make up for emitting. I make this argument in three steps. I first establish that there is sense of 'morally permitted' which admits that people may have corrective duties despite acting permissibly. I then argue that people are sometimes permitted in this correction-entailing sense. Finally, turning specifically to GHG emissions, I show that the correction-entailing sense of moral permissibility extends to everyone that could make up for emitting without unreasonable cost.

Qualified and Unqualified Moral Permissibility

Let us begin by considering this rough argument for the exemption claim:

⁷For this point, see Bowman (2014). One idea is that we must parse the vital interests more finely, such that people are not permitted to satisfy 'mere' decency interests if it comes at the price of frustrating other people's survival interests (Morrow 2015; Shue 2020, 127–8; Vanderheiden 2008, 243). A crucial question here concerns whether (and, if so, how) the number of people affected matters.

⁸To be precise, Rao and Baer (2012) refer to 'decent living emissions', which they take to be more capacious than subsistence emissions.

- (1) People are morally permitted to satisfy their vital interests.
- (2) Subsistence emissions are needed to satisfy vital interests.
- (3) Therefore, people are morally permitted to produce subsistence emissions, *and they should be exempt from responsibility for doing so.*

The argument is clearly invalid because the italicized part of the conclusion (the exemption claim) does not follow from the premises. To make it valid, we would have to add a premise saying that those who satisfy their vital interests should be exempt from responsibility for doing so. However, this premise would not necessarily be true, for there is nothing in the notion of moral permissibility that entails exemptions. To be morally permitted to do something just means that one violates no moral duty in doing that thing, and it is a further question whether one may be held responsible for it. Call duties to make up for having performed some act 'corrective duties'. It does not follow conceptually from the fact that an act was morally permitted that it could not lead to corrective duties, as we can distinguish between what I term 'qualified' and 'unqualified' permissibility. To be morally permitted to φ in an unqualified sense means that we would not have corrective duties (for φ -ing) if we were to φ . When we have a qualified permission to φ , by contrast, we would have corrective duties (for φ -ing) if we were to φ . Both are genuine forms of moral permissibility because they say that φ -ing is not morally forbidden, but only the former comes with exemptions. It would be a mistake, then, to treat the exemption claim as analytically true.

Are moral permissions ever qualified though? The answer is surely 'yes'. Consider Joel Feinberg's famous 'cabin case':

Suppose that you are on a back-packing trip in the high mountain country when an unanticipated blizzard strikes the area with such ferocity that your life is imperiled. Fortunately, you stumble onto an unoccupied cabin, locked and boarded up for the winter, clearly somebody else's private property. You smash in a window, enter, and huddle in a corner for three days until the storm abates. During this period you help yourself to your unknown benefactor's food supply and burn his wooden furniture in the fireplace to keep warm. (Feinberg 1978, 102)

Feinberg (1978, 102) thought that given the danger to your life, you would be 'justified in doing all these things', even though it would infringe 'the clear rights of another person'. However, he also thought that you could not walk away from the situation without redressing the cabin owner. As Feinberg (1978, 233) wrote:

We would not think it inappropriate to express our gratitude to the homeowner, after the fact, and our regrets for the damage we have inflicted on his property. More importantly, almost everyone would agree that you owe *compensation* to the homeowner for the depletion of his larder, the breaking of his window, and the destruction of his furniture.

This seems highly plausible. People no doubt have a moral permission to damage property to save their own life, but it would be odd to think that there can be no moral requirement to undo the losses inflicted in the process.⁹ There is clearly something to regret about how the backpacker acted, and if they were to suggest that they owed no compensation just because they were permitted to protect their own life, then they would be guilty of conflating two quite different

⁹It might be thought that the moral permission is only there if the blizzard was sufficiently unexpected to make the backpacker blameless. This might, in turn, be taken to reveal a disanalogy with the case of climate change, which is anything but unexpected. However, I would say that the backpacker would have a moral right to break into the cabin even if they were to blame for exposing themselves to the risk simply because the interests involved are of such unequal weight. Therefore, as stated earlier, I would not take the past avoidability of subsistence emissions to undermine a current permission to produce them.

things, that is, the permission to perform the initial act and the permission to walk away from the situation without setting it right.

Admittedly, the notion that permissions can be qualified is not accepted by everyone. It requires that one accepts the reality of moral conflicts to some extent, that is, that an act can be both wrong or regrettable in one respect and right or desirable in other respects. However, qualified permissibility does not depend on moral dilemmas.¹⁰ The point of saying that the backpacker had a qualified permission is not to say that they would have acted wrongly no matter what they did, but rather to say that they have a corrective duty despite having acted permissibly. Hansson and Peterson (2001) put this in terms of *residual obligations*. Residual obligations are obligations that persist even though the primary obligation – in this case, the obligation not to break into other people’s cabins – is overridden. What I refer to as a corrective duty is a residual obligation so understood.

Two further things should be clarified about the distinction between qualified and unqualified permissibility. First, qualified permissions do not depend on performing the corrective duty. When we are permitted to φ in a qualified sense, we may φ independently of whether we make up for it. The cabin case involves a qualified permission because the backpacker would have had a moral right to break into the cabin even if they knew that they would not compensate the owner for the damages. When actors fail to perform corrective duties that they accrue despite acting permissibly, they do act wrongly, but this wrong does not change that the original act was permitted. This can be contrasted with what we might call ‘conditional’ permissibility, which is when the permission to perform the act does depend on correcting.¹¹ Secondly, there are several reasons why a harmful act may be permissible in an unqualified sense. For one thing, the need for correction may never arise because those who suffer harm are unentitled to redress. There is no duty to correct for proportionate defensive harms inflicted on an attacker, for example, and so the permission to inflict such harms counts as unqualified. For another thing, we may be unable to *discharge* the corrective duty. If the backpacker would be too poor to compensate the cabin owner, then they would have an unqualified permission to cause the damages for the simple reason that they could not correct them.

Qualified Permissions to Produce Subsistence Emissions

But are moral permissions ever qualified in the case of producing subsistence emissions? The answer is surely ‘yes’ here too. If emitting GHGs harms others – I deal with the objection that it does not in the fifth section – then it is plausible that there can be situations in which a person owes correction even though emitting was necessary to satisfy vital interests. It would be strange to suggest, for example, that people who effortlessly could make up for their subsistence emissions would be under no duty to do so. The fact that these people cannot be expected to *refrain from* such emissions is not a reason to say that they should be absolved from *responding* to the harm they bring about.

Exactly where to draw the line between qualified and unqualified permissions depends on why we have a moral right to produce subsistence emissions in the first place. Views may differ here, but the most common and plausible explanation is that we have this right because we are permitted to protect our own vital interests even when doing so imposes costs on others. The right to produce subsistence emissions thus flows from a sufficientarian morality according to which people have a basic right to a decent minimum and where strong priority is given to those whose

¹⁰For moral dilemmas, see Tessman (2015). The reality of moral dilemmas is contested because they suggest that there are situations in which one cannot avoid acting wrongfully. The cabin case is not a moral dilemma because the reasons for breaking into the cabin override or easily outweigh the reasons against it.

¹¹An example of conditional permissibility is when you are only allowed to walk your dog in a park if you pick up their poop.

minimum is threatened compared to those that have more than enough.¹² If this is what grounds the right, then qualified permissibility holds for all situations in which people could make up for their subsistence emissions without jeopardizing their vital interests, or perhaps vital interests of a comparable moral weight. Unqualified permissibility is reserved for those who would be unable to satisfy their (comparably important) vital interests if they were to make up for emitting. The reason scholars have overlooked this point is that they have made the aforementioned mistake of assuming that only poor people produce subsistence emissions. Once we bear in mind that affluent people produce subsistence emissions too, we see that it would be implausible to extend unqualified permissions to everyone.

The variable moral force of subsistence emissions is welcome news because it means that the environmental implications of recognizing the right to subsistence are not as bad as we might think. It seems clear, for example, that most citizens of developed countries could relinquish considerable amounts of resources and still be able to lead comfortable lives. On the sufficientarian morality that grounds the right to produce harmful subsistence emissions, this means that these people are eligible to carry costs associated with their emissions. How many people would be eligible naturally depends on how many can correct for emitting without jeopardizing their vital interests. This will depend on one's substantive view about what counts as vital interests, but just to indicate some of the possibilities, one option would be to follow the Greenhouse Development Rights (GDR) framework and say that anyone earning more than USD7,500 per annum has the capacity to correct for emitting without unreasonable sacrifice (Baer et al. 2010; see also Holz, Kartha and Athanasiou 2018). This is no doubt an imperfect generalization, but for practical purposes, one would have to rely on approximations, and if one were to set the cut-off at that income level, then roughly 20 per cent of the world's population would come under corrective duties for producing subsistence emissions. This would obviously include most residents of developed countries. If one were to take a stricter approach and include everyone who earns more than USD4,045 per annum, which is the World Bank's benchmark for upper-middle-income countries, then the share would grow to 66 per cent.¹³ It is important to remember that what ultimately matters from an environmental perspective is not the number of people who would have corrective duties, but how many *emissions* these people produce. If higher-income people produce disproportionately many subsistence emissions, then the consequences of including 'just' them among the duty bearers will be significant.

The extent of people having a qualified permission depends on not only economic capacity, however, but also what a duty to 'correct' involves in this context, for if correcting for emitting is difficult to do, then fewer people will have a duty to do so. It is essential, then, to also reflect on the content of the corrective duties.

Duties to Correct

So far, I have argued that the exemption claim is incorrect because some emitters owe correction for producing subsistence emissions. This raises the question of what 'correction' amounts to in this context. Answering this question is important not only because it is essential to think about what one can do to make up for having emitted, but also because it can affect the share of people who have an unqualified permission, for if it turns out that we typically cannot make up for emitting, then it follows that most people have an unqualified permission to emit after all. One cannot have a duty to do what one is unable to do.

'Corrective duties', as the term is used here, refers to morally required acts that make up for a harmful act, in this case, one's emissions. The idea is that although emitting GHGs contributes to harm, one can at least partially reduce the legitimate complaint of others by performing such acts.

¹²For sufficientarianism, see Shields (2020). It should be noted that the argument I am offering does not rely on sufficientarianism being exhaustive of justice.

¹³Income data are from World Bank (2022). The dollar figures are purchasing parity adjusted.

The most obvious example of a corrective act thus understood is *offsetting*, which the IPCC (2014, 1268) defines as the activity whereby ‘a unit of CO₂-equivalent emissions ... is reduced, avoided, or sequestered to compensate for emissions occurring elsewhere’. Offsetting can correct for emissions because if an actor is able to reduce, avoid or sequester emissions by a corresponding amount elsewhere, then this would cancel the effects of the actor’s own emissions, making it as though the emissions never happened (Broome 2012).

There are, however, several issues with offsetting. For one thing, it is not clear that it works well in practice. Both the voluntary offset market and the international system of carbon credits established by the Kyoto Protocol’s Clean Development Mechanism have produced some questionable or even corrupt practices, such as earning money by promising to preserve forests that were not at risk of being cut down in the first place (Carton et al. 2020; Clarke and Barratt 2021; Lohmann 2005). Such practices do not offset emissions, but merely game the system. However, offsetting is a challenging notion even when all parties involved are well intentioned and sincere. This is because offsetting is only successful if it brings about an equivalent reduction in GHG concentrations that would not have happened anyway, an aspect that is known as ‘additionality’. Establishing additionality is notoriously difficult, so it is often unclear whether offsetting leads to genuine reductions, as opposed to paying for events that would (not) have happened either way (Hyams and Fawcett 2013). The permanence of the reductions is also a concern (Barry and Cullity 2022). Offsetting often involves planting trees, but trees are not secure storages of carbon. Finally, offsetting is known to have negative consequences for biodiversity and land use, particularly in developing countries (Carton, Lund and Dooley 2021). Problems like these have led critics to label offsetting as a ‘dangerous distraction’ (Childs and de Zylva 2021) or a ‘fantasy’ (Watt 2021).

Another, less-discussed problem concerns the timing of offsetting. Offsetting hardly makes it as though one’s emissions ‘never happened’ if one offsets later, for the emissions will then affect the climate in the intervening period (Campbell 2021). To work as a correction, it is critical that the reduction in GHG concentration occurs in close temporal proximity to the emissions. Indeed, the best would be if it occurred *beforehand*, as this would make the actor’s impact on the climate negative overall (the actor’s contribution to GHG concentrations would be negative until this is ‘eaten up’ by the actor’s eventual emissions). However, offsetting often involves actions that take many years to come into full effect, such as planting trees. Thus, in practice, it is likely that offsetting will fail to be prompt enough.

None of this is to suggest that offsetting is flawed as a method for correcting as such. Offsetting through direct air capture and geological sequestration, for example, would allow actors to remove GHGs virtually permanently from the atmosphere and do so without raising questions about additionality. However, this technology is currently not available at the scale or price that would allow for large-scale offsetting (Minx et al. 2018; Smith et al. 2015). In the present circumstances, offsetting is likely to rely on things like planting trees or investing in renewable energy, which are less reliable. But what is the alternative? The obvious answer is that actors should avoid emitting in the first place, but this answer is not on the table when it comes to subsistence emissions, for actors cannot reasonably be expected to forgo these emissions. Thus, the conclusion that suggests itself is that actors should offset their subsistence emissions to the best of their ability, looking for options that are as direct, permanent and prompt as possible. Such offsetting is likely to be imperfect, but it is better than nothing, and it could go some way towards making up for emitting.

Offsetting is, however, not the only thing people could do to make up for emitting. Other options are to contribute to *adaptation* to climate change or to *compensate* victims of climate change. These actions can make up for having emitted because, although they do not mitigate climate change itself, they ensure that there is at least an adequate response to its adverse effects. When people help make climate change less harmful than it will otherwise be (adaptation) or take part in redressing those suffering ‘loss and damage’ from climate change (compensation), they reduce the complaint others have against them for contributing to climate change.

A worry with adaptation and compensation as methods for correcting is that it is unclear how ordinary people could undertake them. Unlike offsetting, there is currently no market that allows people to contribute directly to climate compensation or adaptation. However, nothing central hinges on this, for while the duties to correct as here construed ultimately pertain to individuals, they can be exercised collectively. For example, the citizens of a country may collectively discharge their corrective duties by contributing money to international funds that finance adaptation projects or cover climate-related loss and damage. This makes adaptation and compensation viable methods for correcting, though they would ultimately rely on tax-funded programmes and be orchestrated by the state. Offsetting could also be organized collectively in this way.

There are, then, at least three ways for people to correct for having emitted. In terms of their priority, if it works, it is likely that offsetting would be the best. This is so for the same reason that climate change mitigation is generally preferable to adaptation, which, in turn, is generally preferable to compensation (Baer 2010; Duus-Otterström and Jagers 2011). If offsetting were to be fully successful, there would be no corrective duty to take additional steps, for the emitter would no longer count as contributing to climate change. However, when offsetting works imperfectly, there will be corrective duties to also contribute to adaptation and compensation. This is because the emissions are then contributing to climate change, generating a claim that the associated harms be prevented or at least compensated. Needless to say, what can be expected of each emitter is not that climate change causes no harm at all or that all climate harm is compensated, but only that they contribute to adaptation and compensation in proportion to their emissions.

This is not to suggest that people would be able *fully* to correct for having emitted by performing these acts. As noted earlier, it is unlikely that offsetting will make it as though one's emissions never happened, and even ample resources for adaptation will fail to prevent all climate harms (IPCC 2022). Compensation, meanwhile, has the problem that some losses are impossible to repair (Page and Heyward 2017). However, the argument made here neither assumes nor requires full correction. Even a duty to *partially* correct for one's emissions is enough to show that the tension between the right to produce subsistence emissions and combatting climate change is less than one might initially think, and this is so whether we are talking about the extent of climate change or its adverse effects.

Objections

Let us now consider some objections to the argument. One objection is that none of the remedies I have considered is corrective because they do not respond specifically to the claims of those victimized by our emissions. The thought is that while the remedies may prevent harm to people or compensate those who are, in fact, harmed, these people will be non-identical to those who suffer harm because of our emissions. For example, if an actor A emits x units of GHGs on Monday but then offsets x emissions on Tuesday, then A's Monday emissions will still be causally implicated in harm, and the people suffering *this* harm will be different from the people who are prevented from suffering harm by offsetting on Tuesday (see also Campbell 2021; Stefánsson 2021). Similarly, if an actor contributes to adaptation or pays for climate-related damages, then the beneficiaries are highly unlikely to be the same as those who are, or will be, harmed by the actor's emissions. There is thus a sense in which these remedies fail to make it up to those harmed by our emissions, raising the question of whether they can serve as a basis for qualified permissions to emit.

The problem with this objection is that it rests on an implausibly disaggregated conception of the corrective duties. The harms of climate change are jointly caused, and it makes little sense to focus on which individual molecules caused which individual outcome, if such an approach is even coherent (Broome 2012, 89). It is more plausible to think of people's emissions as contributing to an overall 'pot' and then to regard corrective duties as owed to everyone who is put at unjustified risk of harm by this pot. So conceived, there is no difficulty in thinking of things like

offsetting and adaptation as corrective. It seems clear, for example, that if an actor were to offset emissions by sequestering them in advance, then these emissions will not count as contributing to the risk of harm posed by climate change, and this even though it is possible that the particular molecules the actor released into the atmosphere are, in fact, involved in a causal chain of events that ends up harming someone. For the same reason, we can rightly say that an emitter who covers losses suffered by climate victims engages in ‘compensation’ even though there is no causal link between the emitter and the particular person who happens to receive compensation. Such an act will not compensate in the orthodox sense of making wrongdoers redress their particular victims, but this sense of compensation is ill suited for climate change to begin with.¹⁴

A second objection is that individual emitters do not owe correction because their emissions make no morally significant difference to the rate or extent of climate change. Several theorists have argued that since each individual’s emissions are so tiny compared to the total, they are neither necessary nor sufficient for any of the harms caused by climate change.¹⁵ If this is correct, it is unclear why there would be a duty to make up for one’s emissions. Indeed, this worry seems to stand even if we adopt the contributory conception of harm just sketched, for if one’s contribution to the overall ‘pot’ of GHGs is morally inconsequential, then it seems that it cannot generate corrective duties.

The argument from inconsequentialism is an important challenge, but we can set it to one side here, for if individual emissions are inconsequential, then this would question individuals’ duty to correct for *any* emissions, not just subsistence emissions. The debate on subsistence emissions, however, is premised on the assumption that there is a moral difference between subsistence emissions and other kinds of emissions precisely because the former are permitted in a way the latter are not. For the purposes of discussing the role of specifically subsistence emissions in climate justice, we are entitled to assume that individuals can act wrongly by emitting GHGs in the first place. It is also worth noting that the argument from inconsequentialism has been forcefully disputed. Some theorists argue that individual emissions do cause harm, though this harm is best thought of as *expected* harm. Their argument is that since climate change is harmful and emissions cause climate change, it must be the case that even a small number of emissions come with a non-zero expectation of harm (Broome 2019; Hiller 2011). Other theorists argue that individual emissions may be wrong even though they are not harmful, for example, because they violate duties of fairness and reciprocity (Vanderheiden 2016). It is not as though the argument from inconsequentialism is universally endorsed.¹⁶

A third objection is that the distinction between subsistence and non-subsistence emissions is irrelevant because *everyone* is morally permitted to produce *any* emissions if they correct for them. There is thus nothing special about producing subsistence emissions. People should correct for emitting if they can, but as long as they do correct, it does not matter if the emissions went into the means of survival or sheer luxuries.

The problem with this objection is that it overestimates how effective correcting is. As noted earlier, there are several reasons to think that correcting can only partially make up for one’s emissions. A strategy of emitting-plus-correcting is therefore morally inferior, in terms of responding to climate-related complaints, to not emitting in the first place. This conclusion does not apply to subsistence emissions, however, since these are emissions people cannot be expected to forgo. Subsistence emissions are morally distinctive precisely because we think that they are robustly morally permissible even if the associated harm cannot fully be prevented or undone. This is what makes the permission to produce these emissions ‘qualified’ and not ‘conditional’. It should also be noted that nothing in my argument would change if other emissions

¹⁴Goodin (2013) notes that compensation is a ‘victim-centred’ remedy that need not come from the perpetrator.

¹⁵Hiller (2011) calls this the claim of ‘individual causal inefficacy’. For an overview of the debate, see Fragnière (2016).

¹⁶Another way to challenge the argument from inconsequentialism is to question its individualist starting point, as the argument is obviously unpersuasive if emissions are attributed to large collective agents, such as major states.

could be made permissible by undertaking corrective acts, as it would not dispute the conclusion that some people ought to correct for producing subsistence emissions. Indeed, the distinction between qualified and unqualified permissibility can be applied to any morally permitted emissions. Even if we think that some non-subsistence emissions are morally permissible, this does not mean that the emitter could not be held responsible for them.¹⁷

A fourth objection is that my account is overly strict insofar as it requires everyone with spare capacity to correct for having emitted. There are several versions of this objection: we may wonder why there is a duty to correct when there are better things people could do with their resources; why people should have a duty to correct if others do not correct; or why those with the best economic means should not do all the correcting. Above all, some may question the notion of having a duty to correct even for one's subsistence emissions when there are so many actors that produce copious amounts of inessential emissions.

These questions are directed at the role of my argument in a comprehensive account of climate justice. I cannot hope to address this topic properly here, so I will limit myself to making two points that help put my argument in proper context. First, the argument as I have set it out assumes that emitting GHGs can be seriously wrong because it contributes to the frustration of other people's vital interests. It is the seriousness of this wrong that motivates a stringent duty to correct for the emissions one nevertheless produces. We might, however, regard climate change in a different way. To use Simon Caney's (2014) distinction, we could see it as less governed by 'harm-avoidance justice' and more governed by 'burden-sharing justice'. Since this would put a premium on fairness between burden takers, it would weaken the duty to correct for those who emit comparatively little or who are relatively disadvantaged economically, and this even though the extent of their corrective duties is modest to begin with.¹⁸ It would not, however, change the conclusion that there is a corrective basis for holding at least some subsistence emitters responsible. Secondly, the argument does not assume that people have no climate duties besides lowering their own emissions and correcting for the emissions they produce. The argument is compatible with, for example, forward-looking and collective duties to contribute to the transformative structural change that is needed to truly solve the climate problem (Cripps 2013).¹⁹ Indeed, the argument is even compatible with endorsing non-emissions-based *grounds* for climate duties, such as ability to pay (Shue 2014, 180–94). I have shown that there is a corrective duty for some actors to make up for producing even subsistence emissions; it is a separate question as to how weighty this duty is in an overall account of climate justice.

Finally, it should be noted that the argument need not dispute that the duty to correct for subsistence emissions should ultimately fall on the actors (for example, politicians, business leaders, industry lobbyists and so on) who are most to blame for the fact that emitting GHGs is still necessary to satisfy vital interests. Indeed, this could be seen as the most appropriate way to correct because it would burden the actors that are most responsible for bringing the emissions about. It is worth asking who should count as an 'emitter' in the first place: should it be those who produce the emissions or those who ensure that the emissions need to be produced? This is a complicated question that I cannot do justice to here. I will just note that if an actor A ensures that another actor B must emit GHGs to satisfy vital interests, this might well make the emissions A's *emissions*, meaning that the duty to correct for them would fall on A. Thus, we should not assume that the argument offered here pillorizes ordinary people while absolving the powerful.

¹⁷Unavoidable emissions are clearly morally permissible since 'ought implies can', but some also think that fair-share non-subsistence emissions are permissible (see, e.g., Baatz 2014). I would say that very beneficial non-subsistence emissions are also permissible. In all these cases, however, we can ask whether the permission is qualified or unqualified.

¹⁸For the distinction between the strength and extent of duties, see Duus-Otterström (2021). The extent of the corrective duties is small for people who have little spare capacity to correct or who do not have many emissions to correct.

¹⁹These 'political' duties do not count, however, as corrective because they do not respond to the harm one has caused sufficiently directly.

Conclusion

I have argued that the role of subsistence emissions in climate justice is more complicated than standardly thought. While there is little doubt that people have a right to *produce* subsistence emissions, this does not mean that they cannot be under a moral duty to *make up for* these emissions. Indeed, on the basic morality that grounds our right to satisfy our vital interests even though it imposes harm on others, it follows that anyone who can make up for emitting without frustrating their vital interests has a moral duty to do so. Once we recognize this, we see that the environmental implications of the right to produce subsistence emissions are less radical than one might think. There is a genuine tension between the right to subsistence and avoiding climate change, but it has been exaggerated by incorrectly assuming that permissions come with exemptions here.

Let me end by pointing out what I take to be an important general lesson arising from this argument. When we theorize climate justice, we must be careful to disentangle principles that guide the allocation of emissions and principles that guide the allocation of costs. Theorists sometimes muddle this distinction, such as when emissions egalitarianism – the principle stating that everyone has a moral right to produce the same number of emissions – is portrayed as a burden-sharing principle (Roser and Seidel 2017, 150–64). The concept of subsistence emissions illustrates why upholding the distinction is important. It shows us that when we pose a question like, ‘How should the remaining emissions be allocated?’, it is essential to remember that just because the *emissions* should be allocated in a certain way, this does not mean that the costs of reaching or maintaining this distributive profile should be allocated in the same way.

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