

Individuals' contributions to harmful climate change: the fair share argument restated

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Abstract

In the climate ethics debate, scholars largely agree that individuals should promote institutions that ensure the reduction of greenhouse gas emissions. This paper aims to establish that there are individual duties beyond compliance with and promotion of institutions. Duties of individuals to reduce their emissions are often objected to by arguing that an individual's emissions do not make a morally relevant difference. We challenge the argument from inconsequentialism in two ways. We first show why the argument also seems to undermine the case for duties to promote institutions that the arguments' proponents endorse. Second, we argue that individuals ought to cut emissions if they exceed their fair share of emissions entitlements and, by emitting, contribute to climate-related harm. In response to inconsequentialism, we specify the notion of 'contribution' via the so-called NESS theory, according to which an act is causally relevant for and contributes to an outcome if it is a Necessary Element of a Set of conditions that is Sufficient for the outcome. After refuting two objections to our approach, we conclude by discussing how to deal with possible conflicts between duties to promote institutions and to reduce one's emissions.

Keywords: Climate Change, Individual Responsibility, Emissions Reductions, Mitigation, Fair Shares

1. Introduction

'If you're an environmentalist, how come you behave so environmentally-unfriendly?' (Neuteleers 2010, 502)¹ In important contributions to climate ethics, Baylor Johnson (2003) and Walter Sinnott-Armstrong (2005) both justified environmentally unfriendly behavior at the individual level.² In particular, they denied that there are duties to cut individual greenhouse gas (GHG) emissions. Rather than to individuals, they assign responsibility for GHG reductions to governments, which in turn are obliged to establish institutions that ensure these reductions. According to these authors, individuals' duties are limited to *complying* with existing institutions and *promoting* institutions yet missing (in the following: promotion duties).

The present paper aims to establish that there are individual duties beyond compliance and promotion (in the following: reduction duties), a claim that is still heavily disputed (Neuteleers

¹ Neuteleers rephrased Cohen's well-known book title 'If You're an Egalitarian, How Come You're so Rich?' (2001) with respect to individual environmental duties.

² For similar arguments see Cripps (2013), Neuteleers (2010), Sandberg (2011), Aufrecht (2011) and Gesang (2015).

2010; Cripps 2013; Kingston and Sinnott-Armstrong 2018, Neuteleers in this issue). An important line of reasoning against such duties is the so-called argument from inconsequentialism, i.e. that if ‘the actions I perform as an individual only have an inconsequential effect on the threat of climate change, [...] it cannot be morally wrong for me to take my car to work every day or refuse to recycle.’ (Sandberg 2011, 229). In a first step we argue that consequentialist arguments against individual duties also undermine the case for promotional duties that the arguments’ proponents endorse. While some scholars claim that these arguments do or do not apply to promotional acts (Fragnière 2016; Booth 2012; Kingston and Sinnott-Armstrong 2018), this issue has not been discussed in any detail up to now. Second, we take up the intuitively plausible notion that for me to have duties to reduce my emissions beyond compliance and promotion there must be some kind of causal link between what I do (or omit) on the one hand and harmful climate change on the other.³ To this end, we specify the notion of ‘contribution’ (to harmful climate change) via the so-called NESS theory (Wright 1985; Braham and van Hees 2009; 2012). According to NESS, an act is causally relevant for and contributes to an outcome if it is a Necessary Element of a Set of conditions that is Sufficient for the outcome. On this understanding, causal relevance does not require that my act indeed does make a difference (actual difference-making) but only that it could make a difference (potential difference-making).

By integrating NESS into the fair share argument (Baatz 2014), we present an approach that is able to capture the intuition that emitting is bad even if we cannot demonstrate that these emissions caused this or that outcome. At the same time, it avoids the objection that a notion of contribution is meaningless when the (alleged) contribution to an outcome has no causal link to that outcome (cp. Kingston and Sinnott-Armstrong 2018, 173-174). We believe that this approach provides a new and convincing argument that individuals have duties beyond compliance and promotion, i.e. to limit emissions to their fair share of emission entitlements.

The paper proceeds as follows: Since some authors justify duties to reduce one’s individual emissions by pointing out that many corresponding actions also promote institutions that limit GHG emissions, our discussion starts with some clarifications regarding duties to promote (Section 2). In Section 3 we then argue that different versions of the argument from inconsequentialism likewise undermine duties to promote. Subsequently we present our NESS-based fair share argument (Section 4) and defend it against objections (section 5). The final

³ For arguments justifying duties to reduce emissions independent from casual relations between individual emissions (reductions) and climate change see e.g. Hourdequin (2010) and Knights in this issue.

section concludes by briefly discussing how to handle situations where duties to promote and to reduce emissions to one's fair share conflict. Note that we are only concerned with duties to reduce emissions, that is mitigation, and do not address adaptation and rectification (but see Gracia-Portela in this issue). Furthermore, we do not discuss what an individual's 'fair share' of promotion is.

2. Individual duties to promote institutions

Duties to promote initially refer to any kind of action that primarily aims at promoting yet non-existent formal institutions including the establishment of new decision-making structures (Cripps 2013). Examples of duties to promote include classical political action, such as voting and participating in demonstrations, but also action such as supporting an environmental organization, participating in a consumer boycott or trying to convince friends of an opinion (Neuteleers 2010; Cripps 2013).

However, individual behavior not primarily targeted at promoting formal institutions may nevertheless contribute towards promotion. First, it can act as a political signal to policy makers. By way of example, if I, as well as a sufficient number of other people, decide to commute via public transport rather than by private car, this might motivate the authority in charge to increase frequency of public transport. Another example concerns food: after demand for directly marketed and/or privately labelled organic food steadily increased since the 1980s, the EU introduced an official organic food label in 1992. Thus, in extension to the fairly common notion of consumption behavior acting as a market signal to private companies, consumption and other behavior can signal the need for legislation to policy makers and thus promote formal institutions (Neuteleers 2010; Lawford-Smith 2016, 80).

Furthermore, my behavior may also have communicative value towards fellow citizens: First, my behavior might directly motivate other people to adopt certain consumption choices (Johnson 2003; Hourdequin 2010; Johnson 2011; Schwenkenbecher 2012; Gesang 2015). Thus, a friend of mine might like my tasty vegan cooking and try out some vegan recipes herself (direct diffusion, see Neuteleers 2010). Second, if many people change their lifestyles in a certain way, this might influence customs, habits, norms and status, that is, informal institutions (indirect diffusion, Neuteleers 2010; also Bell 2005; Schwenkenbecher 2012).

Finally, the communicative value of individual behavior is not limited to positive signals. It can also work in the opposite direction. Thus, individual behavior that runs counter to one's political efforts can work against the success of such efforts by undermining an individual's credibility

(Hourdequin 2010). By way of example, Sinnott-Armstrong's Sunday joy ride (2005) might undermine his political efforts. This holds even if one is convinced that while political engagement is effective, lowering individual emissions is not (more on this below) – simply because most people will *perceive* one's joy ride as hypocritical. In addition, '[...] individual reductions, therefore, may be necessary to convince others of [...] the viability of what one proposes' (Johnson 2003, 285). That is, while my tasty vegan cooking might demonstrate to others that reducing the intake of animal protein in one's diet is not only feasible but actually attractive, my continued joy-riding might send the message that it is enjoyable and that, say, higher carbon taxes are neither viable nor attractive.

In sum, what duties to promote demand is not limited to classical political action but includes certain claims for behavioral changes in so far and because they feature communicative value.

3. Consequences of individuals' promotional activities

Duties to reduce individual emissions in cases where doing so features no communicative value are objected to on the grounds that 'my emissions make no difference' (Sandberg 2011). However, scholars supporting this claim at the same time argue that acts of individuals aimed at promoting institutions do or can make a difference (Cripps 2013; Maltais 2013; Kingston and Sinnott-Armstrong 2018). In contrast, we believe that the argument from inconsequentialism can also be applied to promotional activities. To support our claim, we present arguments claiming that I am not obliged to reduce my emissions since they make no difference to the harmfulness of climate change. We try to show that these arguments would also undermine duties of individuals to promote institutions.

Specifically, we discuss the claim that individual emissions are too small to cause harm and that they either cannot trigger a threshold because the climate system is overdetermined or that the probability that they trigger a threshold is too low to make a morally relevant difference. Basically, these arguments point to different characteristics of the climate system (as a reference system for individual emissions), such as that it encompasses many individual emitters, that it features thresholds, and that there is a possibility of overdetermination. In Section 3.1 we argue that the sociopolitical system (that is, the reference system for individual promotional acts) is equally complex, i.e. encompasses many individual agents, features thresholds, and exhibits possibilities of overdetermination.

Section 3.2 addresses a related bundle of arguments. Rather than directly negating that individual emissions (or emission reductions) do make a difference, these arguments try to show

that promotional acts reduce emissions more effectively. In discussing these arguments, we show that they draw on some of the alleged differences between acts of promotion and emissions (reductions) respectively as discussed in Section 3.1.

If successful, our line of reasoning leaves proponents of the argument from inconsequentialism with two options: either they claim that individuals have neither reduction nor promotion duties (a position widely regarded as implausible), or they do no longer dispute reduction duties. At minimum, it shows that they need to do more in order to defend their position against the charge of incoherence.

3.1 My emissions do not make a difference

Sinnott-Armstrong (2005) prominently pointed out that the emissions generated by an act such as joy riding increase atmospheric GHG concentrations by an infinitesimal amount (roughly one part per quintillion, Kingston and Sinnott-Armstrong 2018, 174). This, however, does not make climate change worse in the sense that any additional harm would be caused by the increase. Moreover, an individual's emissions mean that any GHG concentration level is reached only a fraction of a second earlier than it would have without these particular emissions due to all other emissions happening simultaneously (Maltais 2013, 593; Kingston and Sinnott-Armstrong 2018, 176-178). To cut a complicated argument very short, the earlier realization of the concentration level does not make a difference to climate related harms that are morally relevant.⁴

As noted by Hiller (2011) and Jamieson (2014), the promotional acts of individuals only make tiny contributions to the desired outcome – such as a global climate treaty or a national climate bill – and thus seem inconsequential as well. It does not seem to make a difference whether or not I vote, sign a petition or join a march. Assume I did none of this in the past. It seems very implausible that, had I only met my promotional duty, the Paris Agreement would have been negotiated earlier (leading to a ‘Cancun Agreement’) or that it would have contained, say, stronger enforcement mechanisms.⁵

Against Sinnott-Armstrong's inconsequentialist argument Hiller (2011) claimed that some individuals' emissions will actually make a substantial difference by triggering thresholds.

⁴ We cannot do justice to the nuanced lines of reasoning in the space available. Rather than discussing the argument, our aim is to show why the reasoning can be applied to acts of promotion as well.

⁵ While we believe that the argument likewise works for national legislation, it may not work for very local institutional changes, e.g. if I convince my neighbours to save more energy. But even if I live in a large house with many parties, the argument from inconsequentialism renders the achieved emission reductions, and hence my promotional action, pointless.

Since I do not know if my emissions are the one's triggering the threshold, they are associated with a non-negligible increase in expected harm and this provides a reason to limit my emissions (Hiller 2011, 358–359). Cripps (2013, 123) objects by arguing that the climate 'system is so complex that it can effectively be treated as overdetermined (that is, as if there are more potential emitters than would be needed to tip any given threshold)'. If all or most others continue emitting as they did in the past, the additional emissions of each individual do not trigger any extra harm (2013, 123). Maltais offers a similar, more elaborated, argument and concludes that the probability that my emissions will cause a huge harmful effect is so low that my emitting is morally irrelevant (e.g. Maltais 2013, 593–594; but cf. Lawford-Smith 2016).

The argument can be transferred to the realm of promotional efforts. Assume I vote 'climate party' into office. In a majority voting system, my vote does not matter for the outcome unless the election is decided by one vote, which is extremely rare (Mulligan and Hunter 2001). In proportional representation, my vote causes an infinitesimal increase in climate party's percentage of votes, that will be irrelevant for governmental power as well as policymaking though (see above). Similarly, a march will hardly lead to this or that policy. Even if it did, it would also do without my participation. It seems that in cases where institutional change is eventually achieved, it also would have been achieved with everybody's efforts minus mine.

This may even hold for promotional efforts of persons like Greta Thunberg, initiator of Fridays for future (FFF). So far, the movement has not achieved any observable institutional shift. This may change in the future though. However, would any of these changes have not occurred in the absence of Greta's commitment? It may well be the case that Greta and FFF are so prominent because the social climate was ripe for such protests and they would have emerged in one way or another.⁶ According to Hegel (2015), within societal processes places can emerge that are adumbrated but not yet understood and at some point more or less accidentally occupied by certain individuals. If not Greta, others may or would have occupied this space (Finkelde 2019). More generally, whether and how protest leads to institutional change depends a lot on power constellations and many societal factors. The complex interactions of these factors obscure what an individual's (i.e. Greta Thunberg's) impact in fact is and what would have happened without her individual protest. Finally, note that most people are not extraordinary persons like Greta and would have to make a difference with more common activities.

⁶ In Germany, for example, protests against the clearing of the Hambach Forest to allow for extension of an open-pit coal mine attracted surprisingly large attention and sympathies even before FFF became prominent.

3.2 Individual promotional acts are more effective than individual emission reductions

Another bundle of objections to reduction duties holds that individual promotional acts are more effective than reducing emissions. Along these lines, Cripps (2013, 148) argues that promotional actions ‘are not throw-away acts: one-off bets, the consequences of which are to be assessed in isolation. Even if they don’t succeed straight off, they can still contribute to a stockpile of impetus for collective change’. This seems to suggest that promotional acts of different persons aggregate in a specific way that results in a ‘stockpile of impetus for collective change’. But we think that this does likewise hold for individual mitigation efforts. On a more theoretical level, both climate and sociopolitical systems involve many agents, are complex and possible overdetermined. We do not know (and possibly cannot know) how individuals’ acts regarding emissions or promotion aggregate in these systems. (see section 3.1) Against this background, as far as we can see there are no obvious morally significant differences between aggregations in the climate and sociopolitical system. On a more practical level, one could point to the long-term effects of a climate treaty or national legislation, where the treaty/legislation is framed as a result of the aggregation of promotional acts by many different individuals. But the aggregation of emission acts can likewise result in long-term effects by crossing tipping points. For example, the longevity of an (avoided) collapse of the meridional overturning circulation are comparable to (if not decidedly more long-lasting) than a possible global climate treaty.

Alternatively, one could argue that the individual promotional acts of a single person aggregate over the course of the person’s life to result in a ‘stockpile of impetus for collective change’. Here, we suggest that whether a single act is better described as a one-off bet or as a contribution to a stockpile depends on the kind of act regarding emission reductions and promotion respectively: It is true that if I once forgo a steak in favor of a veggie burger this can be described as a one-off bet. Furthermore, it stands to reason that my choosing the veggie option one day is not necessarily linked to my doing so on another day. But the same applies to promotional action. That is, my going for one march or my voting green one year is not necessarily linked with my going for another march or voting green another year and may well be described as a one-off bet: I try to contribute to voting the green party into government, but it does not happen and nothing changes. By contrast, my buying a fuel-efficient car or insulating my house might – over their lifetime – save thousands of liters of fuel. And similarly, regarding promotion, my

career of engagement in a green party or a green NGO might over time shape the work and success of that party or NGO.

A similar argument to Cripps' casting emission reductions as 'throw-away acts' is presented by Kingston and Sinnott-Armstrong (2018, 185). They note that 'individual political actions can have a snowball effect, and single actions have even a potential world-changing effect that refraining from joyguzzling does not have'.

Again, the statement is open for different interpretations. First, 'individual political actions can have a snowball effect' may point out that a certain promotional act can be decisive for the adoption of an international climate treaty or an effective, national mitigation legislation with substantial long-term effects lasting over generations. As far as we can see the potential world-changing effect of a single political action hinges on its ability to be thus decisive – an ability that could be conceptualized as triggering a threshold in the socio-political system. As discussed in section 3.1, we hold the climate and the sociopolitical system to be similar in terms of involving many actors, featuring a multitude of thresholds and encompassing possibilities for overdetermination. Accordingly, if one assumes that individual acts are able to trigger thresholds in one system, e.g. triggering the adoption of a climate treaty, then one needs to accept the same possibility for the other system, e.g. triggering the collapse of the meridional overturning circulation. Alternatively, if one negates the latter, in our view, one also needs to negate the former.

Another option to read the claim that individual political acts can have snowball effects understands it as pointing out that a certain promotional act might not only contribute towards the adoption of a treaty or legislation but might also motivate others to engage in promotion. We agree. However, as discussed in section 2, the same holds for emission reductions. Think back of the example of my tasty vegan cooking inspiring others to try some vegan recipes themselves. And we are not aware of evidence that promotion is usually (more) effective. Attending a rally or forwarding campaign emails to my friends may well not result in engagement by any further people.

To sum up, in this section we have taken up important arguments claiming that individual emission reductions do not make a morally relevant difference. We demonstrated that these arguments undermine the case for promotional duties that the arguments' proponents endorse. At minimum, this shows that they need to do more in order to defend their position against the charge of incoherence. In our view, the best way to avoid the problem of inconsequentialism is to adopt a different conception of causality: Rather than grounding duties in the actual

difference an individual act, viewed in isolation, makes, it suffices that it *could* make a difference. In the following section we present such a conception of causality, integrating it into the fair share argument.

4. The Fair Share Argument restated

All humans need to emit some GHG in order to survive (breathing, digesting), and they need to emit more in order to live a decent life (how much they need depends on the circumstances they live in, e.g. climate, infrastructure, availability of low-carbon technologies etc.). Asking individuals to give up their decent life is an unreasonable demand (Shue 1993; Fragnière 2018).⁷ Thus, every individual is entitled to emit some GHG.

In order to limit climate change damages, global emissions output must be limited. From the moral point of view, the allocation of the remaining emissions budget ought to be just. If so, we can consider who is entitled to what part of the budget (in detail Baatz 2014, 2016). Following Caney (2009; 2012) and Shue (2014, 311), we call the entitlement to a certain share of the overall emission budget an agent's fair share.⁸

In an ideal situation, no one exceeds her fair share and the total past, present and future emissions budget does not cause harmful climate change. By contrast, if a sufficient number of agents do exceed their fair share, they collectively cause harmful climatic changes. In this section we explain why this constitutes a *pro tanto* reason for individuals to lower their emissions so as not to exceed their fair share. We coin our argument the fair share argument (FSA).

We hold that an individual A's GHG emissions are morally wrong if:

- 1) A exceeds her fair share of emissions entitlements, and
- 2) by emitting, A contributes to a harmful activity.⁹

⁷ We understand the term 'decent life' to signify what people are entitled to in terms of justice. We understand the term as a demanding multidimensional minimum. The term 'demanding' expresses our belief that justice requires more for individuals than to barely survive. The term 'minimum' refers to an absolute or sufficientarian standard of justice. In this paper, we do not argue in favor of a specific metric of justice. Examples for such a demanding multidimensional minimum would be a human rights account or a capability list such as Nussbaum's (2007).

⁸ Depending on the size of the remaining emission budget an individual's fair share can either equal or surpass the amount of emissions she requires to emit in order to be able to live a decent human life. Logically, there is a third possibility, namely, that the remaining emission budget is so small that individual shares fall below what an individual requires to emit to be able to live a decent human life. However, to us, such an allocation of shares would not qualify as just. That is, in our view a situation in which the remaining emission budget is that low does not allow for just distribution but for nothing more than triage.

⁹ We are thankful to an anonymous reviewer for urging us to discuss in greater detail how the fair share and the contribution aspect are related. Thinking about this comment resulted in the FSA as restated here.

We proceed, first, by defining the controversial notion of ‘contribution’ (4.1), second, by discussing why both criteria are needed rather than just one (4.2) and third, by embedding the FSA in an integrationist climate ethical approach (4.3).

4.1 Contributing to harmful climate change

To avoid the problems from inconsequentialism highlighted in the previous section, we define ‘contribution’ via the NESS theory as specified by Braham and van Hees (2009; 2012). According to NESS, an act is causally relevant for and contributes to an outcome if it is a Necessary Element of a Sufficient Set of conditions for this outcome. We believe that NESS captures considered judgments on causation better than rivaling theories because it avoids the problem of suspension of responsibility in overdetermination and alternate causation cases, among others (in detail see Braham and van Hees 2012, 621-629). This is because NESS does not determine contribution counterfactually (‘would harm have occurred if I acted differently?’) but via potential rather than actual difference-making, i.e. whether an act *could* make a difference in a given situation.¹⁰ Drawing on NESS also allows for distinguishing between causing an outcome and contributing to an outcome without altogether eliminating a causal account from the notion of contributing.

Braham and van Hees start from the assumption that a cause C is a condition for an effect E (2009, 326). But rather than understanding C as a necessary or a sufficient condition for E, or both, they propose to subordinate the necessity condition to the sufficiency condition and to replace the idea of identifying C as ‘the cause’ (‘sufficiency’ or ‘necessity and sufficiency’) or ‘a cause’ (‘necessity’) for E with that of identifying C as a ‘causally relevant factor’ for E (2009, 327). They further stipulate that ‘C is a causal condition [i.e. a causally relevant factor] for E if C is a necessary element of a sufficient set of conditions for E (NESS). Or, somewhat more precisely, C is part of a set of conditions that are together sufficient for E and [C] is necessary for that set of conditions to be sufficient for E’ (2012, 613). If an act is a necessary element of a sufficient set of conditions for a certain effect, it is a causally relevant factor, that is, it contributes to that effect.

¹⁰ As leading legal scholars stress, the counterfactual understanding of causation – saying that a cause is a necessary condition – has the implausible consequence that no one causes an outcome in certain overdetermination cases (like XII, in Table 1). Rather, a cause is a necessary element of one sufficient condition, several of which may be instantiated simultaneously (e.g. Puppe 2015, 217).

Next, we illustrate this NESS test in the context of the FSA using a simple example.¹¹ Imagine three individuals A, B and C facing the choice of emitting GHG. Assume that four units trigger harmful climatic changes, emissions entitlements are distributed equally, and everyone’s fair share is one unit (and this one unit allows for a decent life). To keep matters simple, the following focuses on what A does, taking certain emissions of B and C as given (Table 1).

	B emits 0 u. C emits 1 u.	B emits 1 u. C emits 1 u.	B emits 1 u. C emits 2 u.	B emits 2 u. C emits 2 u.
A emits 0 u.	I) Aggregate Emissions (AE): 1 u. Budget not exceeded, no harm occurs	II) AE: 2 u. Budget not exceeded	III) AE: 3 u. Budget not exceeded	IV) AE: 4 u. Budget exceeded, harm occurs A neither passes NESS test nor exceeds FS
A emits 1 u.	V) AE: 2 u. Budget not exceeded	VI) AE: 3 u. Budget not exceeded	VII) AE: 4 u. Budget exceeded A passes NESS test but does not exceed FS	VIII) AE: 5 u. Budget exceeded A neither passes NESS test nor exceeds FS
A emits 2 u., i.e. exceeds her fair share	IX) AE: 3 u. Budget not exceeded	X) AE: 4 u. Budget exceeded A passes NESS test and exceeds FS	XI) AE: 5 u. Budget exceeded A passes NESS test and exceeds FS	XII) AE: 5 u. Budget exceeded A passes NESS test and exceeds FS

Table 1: light grey = no harmful CC and A’s emissions not morally wrong, middle grey: harmful CC but A’s emissions not morally wrong, dark grey = harmful CC and A’s emissions morally wrong; fields surrounded by bold line = A passes NESS test.

Table 1 illustrates two issues, first how the NESS test determines causally relevant contributions and second how the two criteria for morally wrong emissions work together. We address these issues subsequently in this and the following sub-section (4.2).

The fields surrounded by the bold line cover those cases where A’s emissions pass the NESS test: In case VII A passes the test – and hence contributes to a harmful outcome – because her emissions are a necessary element of the sufficient set ‘A, B and C emit’: without her emissions no harm would occur (necessity) and the set of emissions causes harm (sufficiency). This is different in case VIII: A is not a necessary element of the sufficient set ‘A, B, C emit’ because the combination of B’s and C’s emissions is necessary and sufficient. And the set ‘A and B (or A and C) emit’ does not cause harm, i.e. is not sufficient. But A passes the NESS test in cases X-XII: in X, A is a necessary element of the sufficient set ‘A, B and C emit’; in XI, A is a necessary element of both the sufficient set ‘A, B and C emit’ as well as ‘A and C emit’; in XII, while A is not a necessary element of the sufficient set ‘A, B, C emit’, there are three sufficient

¹¹ Hohl (2017, 116–117) illustrates the NESS test by discussing three factories that emit contaminants into a river. We modify and expand her example.

subsets (A, B), (A, C), (B, C) and A is a necessary element of two of them. Case XII is an example for overdetermined harm causation. Here, A contributes to climate change even when the emissions of others are sufficient for the harmful outcome.

The key difference between case XII and real-world climate change is that there are about seven billion emitters rather than three. Gunnemyr thus claims that an individual's emissions 'are not necessary for the sufficiency of any set of antecedent conditions for global warming' (2019). However, contributing to harm does not require 'causing global warming' (Gunnemyr 2019). It suffices that my emissions increase climate change and that this increase leads to some additional harm. In reality, there is a multitude of climatic thresholds rather than one, plus gradual processes. Reaching any of the thresholds will in many cases make a morally relevant difference (Broome 2012, 76) and my emissions contribute to all of them and to all gradual changes (in more detail see Lawford-Smith 2016, 75-76). If I emit 10 tCO₂ in 2019, these can be combined with that year's emissions of all other emitters in very many ways. Contributing to climate change requires that my emissions are *a necessary condition in at least one set* (i.e. a combination of my emissions with that of other emitters) that is *sufficient for crossing at least one threshold* that leads to a harmful outcome. It is very implausible that this does not apply, that is, that my emissions are *not necessary in all possible combinations* (similarly Hohl 2017, 121).

4.2 Contributing to climate change and exceeding one's fair share

That an act contributes to an activity which leads to harm provides a *pro tanto* reason not to perform it (Rateman 2012, 424). This, however, also means that contributing to climate change can be justifiable. Once a certain level of atmospheric GHG concentrations is reached and climate change is underway or present, *all* my emissions might well pass the NESS test as in case VII (see Table 1). Hence, if criterion 2 was used as the sole criterion, all my emissions were morally impermissible in such a situation. Since asking individuals to give up their decent life is an unreasonable demand, criterion 2 needs to be supplemented with an idea of what one is legitimately entitled to emit. This is expressed by the fair share idea in criterion 1.

On the other hand, there also is a *pro tanto* reason not to exceed one's fair share because one uses more of a scarce resource than one is entitled to. But just exceeding one's fair share might be justifiable if and to the extent that others emit less than their fair share so that the aggregate

emissions do not cause harm (case IX in Table 1).¹² As long as the total budget is not exceeded, emitting more than one's fair share is unproblematic if the under-use of others is voluntary. If the under-use of others is involuntary, but I over-use and have no means to minimize or prevent the forced under-use, exceeding my fair share is morally permissible but may create duties that are generated by my benefitting from injustice.¹³ Therefore, criterion 1 is supplemented with criterion 2.

Hence, we claim that it is necessary that both criteria are met for A's emissions to be morally wrong. Table 1 expresses this as follows: The light grey cells cover those cases where the emission budget is not exceeded, so there is no harmful climate change. A's emissions do not contribute to a harmful activity, hence criterion 2 is not met. The dark grey cells cover those cases where the budget is exceeded, so there is harmful climate change and A passes the NESS test, thus contributing to harmful emissions (criterion 2). Furthermore, in all these cases A exceeds her fair share (criterion 1). Accordingly, the dark grey cells cover those cases where A's emissions are morally wrong. By contrast, the middle grey cells cover those cases where the budget is exceeded, so there is harmful climate change, but A's emissions are nevertheless morally permissible: In case IV A does not emit at all, thus she neither contributes to harmful emissions (criterion 2) nor exceeds her fair share (criterion 1). In case VII A passes the NESS test and hence contributes to harmful emissions (criterion 2) but does not exceed her fair share (criterion 1). Finally, in case VIII A neither passes the NESS test (criterion 2) nor exceeds her fair share (criterion 1).

In sum, we established two criteria and there are *pro tanto* reasons not to violate each of them. We argued that it *can be* permissible to violate one of the criteria as long as the other is met. Therefore, acting is wrong if both criteria are not met. Next, we further strengthen FSA by embedding it in a general conception of climate ethics.

4.3 Fair Shares as part of an integrationist climate ethics conception

Caney (2009; 2012; 2018) and Bell (2008) argue that approaches to climate justice can be either isolationist or integrationist on the one hand, and atomist or holist on the other. The former distinction is about how climate justice relates to other (global) justice considerations: the analysis of the distribution of climate-induced costs can either ignore the existing distribution of overall burdens and benefits (isolationism) or take these into account (integrationism) (Caney

¹² In reality, this will remain a theoretical option for quite a while. Given current atmospheric GHG concentrations, emitting less is always desirable and exceeding one's fair share impermissible.

¹³ Such beneficiary duties are controversial, see e.g. Schüssler (2011), but cf. Butt (2013).

2012, 271; Bell 2008, 254). The latter distinction is about whether to deal with the general types of responses to climate change (mitigation, adaptation, climate engineering, rectification) separately or in combination: either different burden-sharing principles are applied to the different types of responses (atomism) or one principle (or a combination of principles) is applied to the total costs associated with all responses to climate change (holism). Hence, according to holism, it is one's overall climate related burden that matters, not what one does in specific domains.

Regarding the former, the fair share approach is integrationist because fair shares are not determined in isolation from other influences on human lives that are relevant from a general justice perspective but considers how much emissions people need to lead a decent life. While this makes determining fair shares very complex,¹⁴ the FSA avoids the challenge that reducing emissions to one's fair share is unfair because it deprives some individuals of the opportunity to realize fundamental interests (the poor Asian rice farmer – Methane! – is a common example).

Regarding the latter, whether one endorses a holist or atomist position determines if actions related to other climate responses affect (holist) or do not affect (atomist) one's fair share. The argument as presented in this paper so far is compatible with both views. For example, a proponent of holism could argue that if a person finances a lot of adaptation, her fair share of emissions increases. By contrast, according to atomism one's fair share will be unaffected by actions such as financing adaptation.¹⁵

The openness of the FSA also holds for other contentious issues, such as historical emissions and offsetting. Regarding the former, accounting for past emissions of high emitters could translate into decreasing their present fair share or even the fair share of their descendants.¹⁶ Whether and to what extent offsetting is morally permissible does not affect the FSA but affects which actions are permissible to meet one's fair share (on the ethics of offsetting see Hyams

¹⁴ Within the scope of integrationist climate ethics, one needs to balance the following two considerations: On the one hand wealth and emission levels are still correlated, so wealthy individuals have more means to compensate a lack of emissions entitlements and should thus reduce more. On the other hand, living in a society with high societal dependence on fossil fuels and the like makes it more difficult for individuals to reduce their emissions, thus potentially lowering what individuals can be asked to do without encroaching on their ability to pursue crucial life projects and thus live a decent human life. More importantly, integrationism transcends the realm of climate ethics by presupposing a perspective on justice founded in a general account of a decent human life, thereby getting into the broad debate if such an account is possible and necessary (for an overview over different accounts see Alkire 2002, Qizilbash 2002, for a detailed argument why such an account is not necessary, see Sen 2011)

¹⁵ However, we elsewhere concluded that arguments presented in defense of atomism fail (Baatz and Ott 2017 and Baatz 2017) and thus call for a holist specification of fair shares.

¹⁶ A position we disagree with, arguing that past emissions should not be taken into account by reducing current fair shares but by additional duties to fund adaptive measure in vulnerable regions Baatz (2017).

and Fawcett 2013 and Spiekermann 2013). If, for example, some offsetting is permissible, affluent individuals might find it a relatively easy option to reduce emissions (in contrast to reducing living space, meat consumption or air travel). Above, we argued that asking individuals to reduce emissions to a degree that equals giving up their decent life is an unreasonable demand. If, however, the possibility to offset makes reducing emissions easier, it may also result in lower fair shares. Here, it is important to note that we adopt a net emissions view: my overall emissions are the balance of the positive (e.g. emissions from my joy riding) and negative emissions (e.g. from my financing carbon sequestration projects or simply planting a tree in my garden) in my responsibility. While this raises several accounting issues, these are not unique to the FSA but beset all approaches that aim at just distribution of net emissions among agents; and ignoring negative emissions already at the conceptual level is implausible.

To sum up, determining (individual) fair shares requires two steps: determining the overall emissions budget and distributing the emissions budget among (individual) agents. The key point is that the FSA uses the general idea of a fair distribution of an emissions budget to ground reduction duties, whatever the budget includes (negative emissions, ‘structural’ emissions¹⁷ etc.) and whatever is considered to be fair (egalitarian, prioritarian, isolationistic, etc.). Specifying either of these issues is beyond the scope of this paper.¹⁸ But our claim is that many wealthy people all around the world are far above any plausible decent life threshold and therefore are obligated to reduce their emissions at least to some extent (see also Baatz 2014; 2016).

5. Objections

In this section, we address two challenges to the FSA. We deal first with Barry and Øverland’s (2015) argument that the NESS theory endorsed by us is implausible and second with Kingston and Sinnott-Armstrong’s (2018) recent critique that the FSA rests on a highly controversial – and in their view unconvincing – principle.

5.1. The (im)plausibility of NESS

¹⁷ ‘Structural’ emissions result from the provision and maintenance of a national or societal (public) infrastructure and institutions and, hence, are difficult to attribute to individuals. Different accounting strategies are conceivable; the simplest would be to split emissions equally among the population.

¹⁸ Regarding determining the remaining emission budget we find the proposal by Allen et al. (2009) quite convincing; regarding the question of a fair distribution we have developed some ideas in Baatz (2014).

We argued that individual emissions are causally relevant *sensu* NESS for climate related harm. Barry and Øverland (2015) attack the NESS theory saying that it invokes ‘an extremely implausible notion of contributing to harm’. To illustrate, they point to the following example (2015, 175): Bill and Ben each throw a rock towards a window that shatters but it turns out that only Bill’s rock actually hit the glass (Ben’s followed Bill’s rock trajectory, passing through the already shattered glass). They argue that to ‘say that Ben contributed to the shattering of the window when neither he nor his rock came into contact with the glass (and where no energy was transferred from the approaching rock to the glass) is implausible’ (Barry and Øverland 2015, 175).

As already noted by Wright (1985, 1791), it is important to distinguish between cases of duplicative causation, where all act at the same time (as assumed by us in Table 1), and preemption where some acts preempt others. Rock-throwing is an example of the latter because Bill preempted the outcome Ben would have caused. In cases of preemption that involve two persons, only one person’s act meets the NESS test (Hohl 2017, 102). The other person’s act – here Ben’s throwing a rock – is irrelevant as the outcome has already been realized. This is apparent if we specify the example by saying that Ben throws a rock five seconds after Bill. Even if both throw at the same time, but Bill throws harder, thus his rock shattering the glass before Ben’s rock arrives, Bill preempts Ben’s act and Ben does not pass the NESS-test.¹⁹ In conclusion, the NESS theory is not ‘extremely implausible’ but in accordance with considered judgments in both cases: Regarding duplicative causation, i.e. multiple actors acting at the same time, as assumed in Table 1, NESS allows distinguishing between cases where A does and does not contribute to harmful climate change (see Table 1), while regarding preemption as described by the example of Bill and Ben, it accurately captures our intuition that Ben does not contribute to the shattering of the glass.

This logic likewise applies to often discussed consumption examples, e.g. purchasing a t-shirt or a flight ticket. Suppose a plane takes off when at least 20 tickets are sold, and 21 people buy a ticket, Joss among them. If we do not know when the tickets are bought or if they are bought at the same time, Joss is a necessary element of one sufficient set (she plus 19 other customers). She is a causally relevant factor for the take-off because her purchase of a ticket could be decisive for the plane to take off though we do not know whether this is in fact the case. If Joss

¹⁹ Ben might still be liable for the damage if we assume that he did not or could not know for sure that Bill’s rock will arrive first and shatter the glass. In that case, he assumes (or considers it possible) that he will cause or contribute to the shattering but decides to nevertheless throw the rock. We would judge this behavior as negligent.

buys her ticket after 20 tickets have been sold, she does not meet the NESS test because the outcome is already fully determined (she cannot, even potentially, make a difference). At first, this may seem counter-intuitive since Joss bought a ticket and sits on the emitting plane (*ex hypothesi*). However, a closer look reveals that in this particular setting she is in no way causally involved in the plane's take off. If we want to retain the idea that a contribution must somehow be causally relevant for the outcome, Joss does not contribute to the emissions of the plane. We suspect that the intuition of her making a contribution is driven by our real-world experience in which no such a thing as 'the' 21st passenger exists (or if it does, nobody, at least not customers, will ever know who that particular person is) and Joss' purchase signals demand, communicates a 'norm of flying' and may very well contribute to further flights.²⁰

The consumption example allows for clarifying a more general point. Consider a variation of the cases illustrated in Table 1: A emits 1.9 units and B and C emit 2 units each. A emits more than her fair share (defined as 1 unit) but A is not a necessary member of a sufficient subset to trigger harmful climate change (in contrast to case XII in table 1). According to the FSA, in this case A does not contribute to harmful climate change and hence does not act morally wrong despite her substantial emissions. But isn't that counter-intuitive? It is not, for the reasons given above. In this simplistic example, A's actions are causally irrelevant. If one is neither actually nor potentially involved in bringing about an outcome, one should not bear responsibility for it (ignoring beneficiary and ability to pay considerations). Again, we believe that the intuition that A does make a contribution is driven by real-world considerations that do not apply here. In the stylised example, and in stark contrast to reality, (i) there is just one threshold, (ii) we know about this threshold and (iii) we are certain that B and C emit two units regardless of what A does. Under these specific circumstances, we believe that A acts permissible indeed because we do not see a good reason why she should emit less.

5.2 Duties in the absence of existing institutions

In their recent paper, Kingston and Sinnott-Armstrong directly criticize the FSA as presented in Baatz (2014). To make our point, we find it helpful to cite their argument at length:

'The fair shares approach conflates intuitions from two quite different kinds of cases. Compare the following two principles:

²⁰ Also, one may argue that Joss has duties grounded in her benefitting from the emissions (though she does not cause the flight and the corresponding emissions, she makes use of it and benefits from the flight caused by the other 20 passengers). This, however, is a different argument, drawing on a beneficiary pays rather than a polluter pays reasoning.

A) When an existing political or social institution encourages cooperation and discourages defection in a collective action problem, individuals have a moral requirement to obey the rules of that existing institution.

B) When no existing political or social institution adequately encourages cooperation and discourages defection in a collective action problem, individuals have a moral requirement to obey the rules of a hypothetical institution that would be adequate or ideal.

Principle A seems true, while principle B is [...] much more controversial. The force of the fair shares approach comes from, we suggest, the intuitive appeal of principle A. When some good has been formally or culturally apportioned out into fair shares among a society or group, even [...] in the absence of enforcement, individuals should obey the existing system of division. [...] Unfortunately, principle B fails in several cases. Imagine a country with an inequitable health-care system that places the lives of many vulnerable people in jeopardy, increasing inequality. The inequities would be removed if everyone paid 3% more for taxes, and that money funded equitable health care for all. Everyone paying their fair share of an adequate scheme of cooperation would mean individuals devoting a portion of their income to such health-care systems via the government. But in the absence of such a system, there is no basis for a moral requirement on an individual to contribute the same amount of money to the government in the hope that the government would provide such services' (Kingston and Sinnott-Armstrong 2018, 182–183).

Kingston and Sinnott-Armstrong mention two functions of (political or social) institutions. First, they note that institutions 'encourage cooperation and discourage defection' (Kingston and Sinnott-Armstrong 2018, 182), that is, institutions enforce compliance (*enforcement*). Later on, they point out that a good can be 'formally or culturally apportioned out into fair shares among a society or group, even [...] in the absence of enforcement' (2018, *ibid.*). We will denote this as *allocation*. An institution can provide allocation without providing enforcement, while the reverse is not possible. In this sense, allocation is prior to enforcement.

The first issue we would like to highlight is that Kingston and Sinnott-Armstrong qualify their own principle A when they argue that when 'some good has been formally or culturally apportioned out into fair shares among a society or group, even [...] in the absence of enforcement, individuals should obey the existing system of division' (2018, 182). If one takes this qualification seriously, their principles should read:

A') When an existing political or social institution apportions fair shares in a collective action problem, individuals have a moral requirement to obey the rules of that existing institution.

B') When no existing political or social institution apportions fair shares in a collective action problem, individuals have a moral requirement to obey the rules of a hypothetical institution that would be adequate or ideal.

To us, B' is much less convincing than B. If a good 'has been formally or culturally apportioned' and the only thing missing is enforcement (i.e. the situation in B), individuals trying to 'obey the rules of a hypothetical institution' know what to do. By contrast, if such an allocation is missing (i.e. in B'), it is much more difficult for the individual to 'obey the rules of a hypothetical institution' because this would involve envisioning an 'adequate or ideal' allocation.

Our second point is that in some cases institutions actually provide a third feature. In these cases, an institution is necessary to constitute the good (*constitution*). This is the case in regard to Kingston's and Sinnott-Armstrong's health care example. Equitable health care for all requires adequate funding, but money can only be transformed into adequate health care by way of some health care system. Even if all citizens of a country paid 3% more in taxes, this money will not morph into equitable health care in the absence of a health care system. Hence, the good 'health care' is constituted by the existence of a health care system.

The same does not hold regarding the relation between emission reductions and mitigating climate change. No climate treaty (or other institution) is necessary for (the aggregate of) individual emission reduction to translate into the good 'mitigation of climate change'.²¹

Note that in those cases where an institution is required to constitute a good, constitution is prior to allocation and enforcement. That is, only if an institution provides the function to constitute a good can this good be apportioned and the allocation enforced.

As far as we can see, Kingston's and Sinnott-Armstrong's example refutes something like principle B' *for those cases* where an institution is required to constitute a good (e.g. regarding health care or most cases of adaptation²²). Here, if there is no institution that apportions fair

²¹ Interestingly, adaptation (to climate change) is comparable to health care: it requires sufficient funds but translating funds into the good 'adaptation' requires an institution.

²² The institution needed does not have to be state-run. Rather than donating 3% of my income in taxes I might have a duty to donate 3% of my income to an NGO provider of high-quality free health care to the least advantaged. However, on a broad understanding of the term, an NGO is just another kind of institution. By contrast, imagine a country (or a remote rural region in a country) where there is no (state- or NGO-led) health care system. There are

shares, the good in question does not exist. Thus, ‘to obey the rules of a hypothetical institution’ would be futile. Our point is that this does not apply to individual emission reductions because no institutions are necessary for (the aggregate of) individual emission reduction to translate into the good ‘mitigation of climate change’.

The FSA does presuppose that a reasonable division of the emissions budget, and hence an allocation of fair shares, is possible. As argued in earlier work (Baatz 2014; Baatz and Ott 2016), 20 years of climate justice debate and elaborated theories of distributive justice allow for some judgment of what individuals fair shares very roughly are. But the FSA does not presuppose that the fair division is agreed upon through an official real-world process or formally acknowledged. In Kingston’s and Sinnott-Armstrong’s framing it thus builds on something like:

A’’) When there is a reasonable division of a collective good, individuals have a moral requirement to obey the rules of that system of division.

We assume that Kingston and Sinnott-Armstrong would also challenge the plausibility of this principle given the lack of formal agreement on a fair division of the earth’s absorptive capacity. But, to reiterate, their above example and argument does not show this, nor the implausibility of principle B or B’ regarding mitigation.

6. Conclusion

In this paper, we justified reduction duties by further developing the so-called fair share argument. In Section 2, we clarified the type of actions covered by duties to promote and showed that and why these may include acts to reduce emission. Subsequently, we turned to important consequentialist arguments against reduction duties and showed why these seem to undermine the case for promotion duties that the arguments’ proponents endorse (Section 3). To us, this does not indicate that there are no such duties but rather that the notion of causality underlying the argument is problematic. Instead, we propose a notion of ‘contribution’ (to harmful climate change) via the so-called NESS theory and invest this notion in a restatement of the Fair Share Argument (FSA) (section 4). Section 5 anticipates and refutes objections against the FSA.

no schooled doctors, no nurses, no pharmacies. In such a country, money cannot buy you adequate health care. Money can give you a chance to leave the country and obtain health care somewhere else, but then again you obtain health care from some kind of functioning health care system in another country.

The FSA builds on two central ideas: Because all humans need to emit some GHG to be able to live a decent human life they are allowed to do so. Because global emissions must be limited, the amount of emissions an individual is allowed to emit is limited to a fair share of the remaining emission budget. How much each of us is allowed to emit depends on the size of the budget and the way the budget is distributed. Substantiating either of these issues goes beyond the scope of this paper. Nevertheless, we believe that any reasonable argument regarding these issues would result in the practical conclusion that many wealthy people all around the world are far above any plausible decent life threshold and therefore are obligated to reduce their emissions at least to some extent (see also Baatz 2014; 2016).²³

According to this paper's line of reasoning, wealthy individuals are obligated to *both* promote institutions aiming to limit climate change *and* reduce emissions to their fair share under present circumstances. The remainder of this conclusion briefly addresses how these two duties relate to each other.

As discussed in Section 2, institutions are not only promoted by classical political acts but also by individual behavioral changes – if these have communicative value. Hence, such changes may result from meeting promotion and reduction duties.²⁴ But the extent (or depth) and type of behavioral changes demanded by the two duties may differ. What promotion duties demand depends on *empirical* considerations regarding the communicative value of different lifestyle changes (e.g. cf. Steg 2015). What reduction duties demand depends on *normative and empirical* considerations regarding the influence of emission allowances on individuals' ability to live decent lives.

However, what must I do if reduction and promotion duties conflict? To start with, conflicts are less likely than one might think. First, in many cases there are synergies between both duties. For example, reduction acts such as commuting via public transport rather than by car or going vegan might also contribute towards changing formal and informal institutions (cp. section 2). In yet other cases there is at least no conflict, such as when my promotional acts do not cause additional GHG.

²³ Note, though, that the FSA is not directed against certain (types of) acts but at one's total emissions in, say, one year. Hence, one might conclude that Sunday joy rides are permissible as long as one does not exceed one's fair share. Note also, however, that Sinnott-Armstrong (2005) defined the original example so that the joy ride is not part of what we consider to be a 'demanding minimum' (see footnote 7) and that it is thus reasonable to refrain from joy riding.

²⁴ Duties to comply can also demand behavioral changes (e.g. if a formerly legal activity becomes illegal). Meanwhile, duties to comply ask for behavioral changes in compliance with formal institutions. By contrast, promotion and reduction duties demand changes that go beyond what is asked for by existing formal institutions.

Second, some alleged conflicts disappear at a closer look: although one way to do promotion involves a lot of emissions others might not. For example, one can run a climate campaign on renewable rather than on fossil energy, use public transportation to attend a rally, virtually attend a meeting rather than in person, etc. Furthermore, promotional goals can be targeted by different acts and these might feature different amounts of emissions. I can, say, support a campaign by attending a rally in a far-away capital or I can lobby my local Member of Parliament.

Still, we do not deny that conflicts exist, and one can distinguish between at least two types of conflicts: one where promotional acts cause emissions and thus conflict with reduction duties (like in the above examples) and another where promotional acts draw on the same resources (time, energy, money) as reductions. We claim that one can choose between doing either promotion or reductions in both types of cases.

Note that choosing between promotion and reduction in a given situation does not imply that I fail to meet promotion or reduction duties. I can do a lot of promotion that involves GHG emissions without necessarily exceeding my fair share in a certain period.²⁵ Likewise, if I forgo *some* promotional acts because of fair share constraints this does not mean that I fail regarding promotion duties as long as I undertake promotional acts available to me *within* my fair share. Both types of duties are limited by what can reasonably be demanded. Therefore, my obligation to promote is limited by fair share duties and *vice versa* (similarly Hourdequin 2010, 450).

This understanding is in line with a holist position. According to holism, one's overall climate related burden matters rather than what one does in specific domains (Baatz 2017). By way of example, doing a lot of mitigation *may* license financing less adaptation. To us, the same applies to the relation between promotion and reduction duties: greatly reducing emissions *may* license doing less promotion and doing a lot of promotion may allow for some additional emissions, i.e. may increase my fair share.

In sum, according to our proposal I am obligated to promote institutions and reduce emissions to my fair share. As long as I do enough, *how* I allocate the means available to me within the limits of demandingness among both goals is largely in my responsibility.

²⁵ Classical political activities are usually undertaken in the area people live and do not involve very GHG intensive activities regarding mobility (going to a march, marching, voting) or electricity (using electronic devices to join campaigns).

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