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BRIDGING THE EMISSIONS GAP:  
A PLEA FOR TAKING UP THE SLACK

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# Bridging The Emissions Gap: A Plea For Taking Up The Slack

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**Abstract.** With the existing commitments to climate change mitigation, global warming is likely to exceed 2°C and to trigger irreversible and harmful threshold effects. The difference between the reductions necessary to keep the 2°C limit and those reductions countries have currently committed to is called the ‘emissions gap’. I argue that capable states not only have a moral duty to make voluntary contributions to bridge that gap, but that complying states ought to make up for the failures of some other states to comply with this duty. While defecting or doing less than one’s fair share can be a good move in certain circumstances, it would be morally wrong in this situation. In order to bridge the emissions gap, willing states ought to take up the slack left by others. The paper will reject the unfairness-objection, namely that it is wrong to require agents to take on additional costs to discharge duties that are not primarily theirs. Sometimes what is morally right is simply unfair.

## I

### Introduction

With the existing unconditional commitments to climate change mitigation, global warming is likely to exceed 2°C<sup>1</sup>. It is widely agreed that global warming beyond 2°C will have very harmful consequences and that constraining temperature increases within these limits is desirable. The difference between the greenhouse gas (GHG) emission reductions necessary to keep the 2°C limit and those reductions countries have currently committed to is called the ‘emissions gap.’<sup>2</sup> Bridging this gap is considered technologically and economically feasible by leading experts.<sup>3</sup> In order to avert global warming beyond 2°C and its harmful consequences countries must reduce emissions beyond their current commitments *before* a global climate treaty is in place in 2020. Delaying comprehensive mitigation measures until past 2020 will make it unlikely that that threshold can be met.<sup>4</sup> In

<sup>1</sup> United Nations Environment Programme – UNEP 2011, “Bridging the Emissions Gap Report,”

[http://www.unep.org/publications/ebooks/bridgingemissionsgap/Portals/24168/01\\_introduction.pdf](http://www.unep.org/publications/ebooks/bridgingemissionsgap/Portals/24168/01_introduction.pdf);

Kornelis Blok, Niklas Höhne, Kees van der Leun, and Nicholas Harrison, “Bridging the Greenhouse-gas Emissions Gap,” *Nature Climate Change* 2 (2012), 471–474.

<sup>2</sup> UNEP 2011.

<sup>3</sup> Ibid.; Nicholas Stern, “Stern Review on the Economics of Climate Change,” 2006,

[http://webarchive.nationalarchives.gov.uk/+http://www.hm-treasury.gov.uk/media/4/3/Executive\\_Summary.pdf](http://webarchive.nationalarchives.gov.uk/+http://www.hm-treasury.gov.uk/media/4/3/Executive_Summary.pdf).

<sup>4</sup> UNEP 2011. One of the risks of delaying action is the so-called ‘lock-in of high-carbon infrastructure’, i.e. choosing emission-intense pathways now that cannot be easily altered in the future. Furthermore, several studies show that mitigation now is less costly economically than mitigation at a later stage (UNEP 2011, N. Stern, “Stern Review on the Economics of Climate Change,”).

short, in order to limit global warming to 2°C we must close the emissions gap and we must do so as soon as possible.<sup>5</sup>

In this paper, I approach the problem of the emissions gap as a problem of partial compliance with a collective moral obligation. I argue that not only is there a moral duty to mitigate climate change and reduce GHG emissions in the long run, but there is a moral duty to bridge the emissions gap as soon as possible, before the year 2020. Currently, there is insufficient compliance with such a duty by capable states. I argue that—given the existing levels of non-compliance and the urgency of the problem—capable states ought to make greater emission reductions than they would have under conditions of ideal compliance.

I will start out by outlining the nature of the problem (II). In part (III) I will argue that defecting or doing less than one's fair share can be a good move in certain circumstances, but not in this situation. Part (IV) demonstrates how in some cases of partial compliance agents are required to take up the slack by others and how the emissions gap is one of those cases. Part (V) will reject the unfairness-objection to my argument, namely that it is wrong to require agents to take on additional costs to discharge duties that are not primarily theirs. Fairness should be restored in the long run though.

<sup>5</sup> See also Henry Shue, "Responsibility to Future Generations and the Technological Transition," in *Perspectives on Climate Change*, 5 (2005), 265–283 and "Deadly Delays, Saving Opportunities: Creating a More Dangerous World?" in *Climate Ethics*. (Oxford: Oxford University Press, 2010).

## II

### The Problem

Scientists agree widely that the global climate is warming, that human activity contributes significantly to this process, and that depending on the degree of warming the change of the climate is very likely to have highly undesirable consequences. Some of the very likely effects of climatic change will be an increase in extreme weather events (floods, storms), sea-level rise and the forfeiture of coastal regions or of entire islands and archipelagos, and the melting of the polar ice caps.<sup>6</sup> From a moral point of view, adapting to its unavoidable consequences is not enough, mitigating of climate change in order to limit its negative consequences is also morally mandatory.<sup>7</sup> The earlier action is taken to mitigate global warming, the better.<sup>8</sup>

Currently, there is no binding global agreement on climate change mitigation and GHG (greenhouse gas) emission reductions. The Kyoto Protocol, which entered into force in 2005, specified emission reduction targets and mechanisms and Annex B countries<sup>9</sup> committed themselves to reducing their

<sup>6</sup> IPCC 2007. *Fourth Assessment Report*. Available at: <http://www.ipcc.ch/>

<sup>7</sup> See i.e. H. Shue, "Face Reality? After You! A Call for Leadership on Climate Change," *Ethics & International Affairs* 25 (2011), 17-26, at 19; Steve Vanderheiden, "Globalizing Responsibility for Climate Change," *Ethics & International Affairs* 25 (2011), 65-84, at 68.

<sup>8</sup> See for example IPCC report, summary, p. 66, see also UNEP 2011 and UNEP 2012, "The Emissions Gap Report 2012. A UNEP Synthesis Report," [http://www.unep.org/gc/gc27/docs/UNEP\\_ANNUAL\\_REPORT\\_2012.pdf](http://www.unep.org/gc/gc27/docs/UNEP_ANNUAL_REPORT_2012.pdf)

<sup>9</sup> These include the 15 member countries of the European Union in 1997, Bulgaria, Czech Republic, Estonia, Latvia, Liechtenstein, Lithuania, Monaco, Romania, Slovakia, Slovenia, Switzerland, U.S., Canada, Hungary, Japan, Poland, Croatia, New Zealand, Russian Federation, Ukraine, Norway, Australia, Iceland.

greenhouse gas emissions on average by 6 to 8% below 1990 levels between the years 2008–2012. But not all Annex B (or high emitting) countries have ratified the Protocol (most prominently the U.S. has not) and the agreement ran out in 2012. In 2011, finally, the parties to the United Nations Framework Convention on Climate Change (UNFCCC) agreed to negotiate a binding global treaty in 2015, which will not enter into force before 2020 though.

The reasons why a binding treaty has not yet been achieved are—to an extent—owed to political tactics and strategy, but they also result from profound disagreement on some theoretical premises—namely the principle(s) of justice which an international treaty should accommodate. And indeed there are numerous approaches to burden-sharing in the context of climate change.<sup>10</sup> However, whatever principle one adheres to, it is clear that industrialized countries will have to take on the major part of the burden with the major issues of disagreement being how much newly industrialized countries such as China should contribute and how to integrate climate justice with wider questions of global justice and development.

The problem is that delaying substantial action until after a binding treaty is in place, i.e. after 2020, is likely to jeopardize the goal of limiting temperature increase by a maximum of 2°C.<sup>11</sup> Emission reductions countries have currently committed to make it unlikely that we remain within the 2°C limit. In the United Nations Environment Program's 2012 Emissions Gap Report, the size of the emissions gap was calculated at 8-13 Gt CO<sub>2</sub>e

<sup>10</sup> See e.g. Simon Caney, "Just Emissions," *Philosophy & Public Affairs* 40 (2012), 255-300; Edward A. Page, "Distributing the burdens of climate change," *Environmental Politics* 17 (2008): 556-575; H. Shue "Face Reality? After You!?" A Call for Leadership on Climate Change."

<sup>11</sup> UNEP 2011.

(carbon dioxide equivalent). This means that total annual emissions must be lowered by that amount until 2020 in addition to current reductions if there is to be a good chance of remaining within the 2°C limit. States would have to make greater emission reductions before 2020 than those they have currently committed to. Which state(s) could take on the burden of reducing emissions by 8-13 Gt CO<sub>2</sub>e until 2020? I am assuming here that the gap cannot be closed by a single state (at an acceptable cost) but only by the collective endeavour of several states. The states that qualify as contributors to that endeavour are states with the capacity to reduce their emissions significantly, namely economically powerful and technologically advanced states.<sup>12</sup>

Collectively, capable states pertaining to this group are not contributing anything close to what it takes to achieve that goal at the moment. Reducing collective emissions to the extent necessary for bridging the emissions gap is collectively possible. However, it is not happening, partly because no single state wants to be at a comparative disadvantage from radically reducing its emissions while others keep polluting. The voluntary mitigation pledges of many capable states are conditional upon other states' mitigation pledges. But does the reluctance of other states to contribute to bridging the emissions gap let capable states morally off the hook? Are they not required to contribute to substantial emission reductions while others do not do so either?

<sup>12</sup> 'Capable' states here means states with enough emission reduction potential. The duty to bridge the emissions gap is foremost a duty of large polluters and technically advanced countries. See UNEP 2011 and Kornelis Blok, Niklas Höhne, Kees van der Leun, and Nicholas Harrison, "Bridging the Greenhouse-gas Emissions Gap," *Nature Climate Change* 2 (2012), 471–474. The capacity to reduce emissions substantially might be seen as a minimum condition for having a duty to contribute to closing the emissions gap, with historical responsibility and benefitting from climate change being further criteria to determine the duty-bearers.



Under non-ideal conditions like the ones prevalent now, willing states have roughly three options for acting: they can either (a) contribute less than what their “ideal fair share” would be, (b) contribute their “ideal fair share”, or (c) contribute more than their “ideal fair share”. But what is meant by an “ideal fair share”? An ideal fair share would be the fair share of a collective burden under ideal compliance. A fair burden-sharing scheme on climate change regulates climate change mitigation, adaptation and compensation distributes related burdens fairly among the world’s nations.<sup>13</sup> It would, for instance, fairly allocate emission rights, specifying how many tons of carbon dioxide equivalent (CO<sub>2</sub>e) each state is allowed to produce within a certain period of time. Under conditions of ideal compliance each state limits its emissions to a prescribed amount. The ideal fair share is what each state would have to contribute to mitigation if all other states (or a sufficiently large number of them) complied with their mitigation duties, too.

Advocates of option (a) would argue that states have no moral duty to take on their ideal fair share of emission reductions while non-ideal conditions prevail, that is, if or as long as other states do not discharge their duty either. According to option (b), states are morally required to reduce their emissions by the amount that is fair under ideal conditions, regardless of whether or not others comply with their duty. I will argue for option (c): Given the circumstances, capable states are morally required to do more than their ideal fair share. This means that they ought to take up

<sup>13</sup> In addition to arguing for a “holist“ approach that integrates climate change mitigation, adaptation and compensation Simon Caney advocates treating climate responsibilities in conjunction with considerations about global and intergenerational justice (Simon Caney, “Just Emissions,” 299). Treating the latter in isolation with the former would run contrary to UNFCCC and not secure the agreement of developing countries and would likely result in deadlock or ineffective deal (Ibid., 279).

some of the slack left by the defectors, i.e. some of the defectors' ideal fair share. Willing states can take up the slack by reducing their emissions below the level of what an ideal fair share would demand or by assisting other states reduce their emissions. Let me first turn to option (a) and why it is wrong in the current circumstances.

### **III Against Defecting**

One of the countries with the highest per capita emissions in the world—Australia—has currently made the following voluntary commitment to emission reductions:

Australia will unconditionally reduce its emissions by 5 per cent compared with 2000 levels by 2020.

Australia will reduce its emissions “by up to 15 per cent by 2020 if there is a global agreement that falls short of securing atmospheric stabilisation at 450 ppm CO<sub>2</sub>-eq under which major developing economies commit to substantially restraining their emissions and advanced economies take on commitments comparable to Australia’s.

[I]f the world agrees to an ambitious global deal capable of stabilising levels of GHGs in the atmosphere at 450 ppm (parts per million) carbon dioxide equivalent (CO<sub>2</sub>-eq) or lower” “Australia will reduce its greenhouse gas (GHG) emissions by 25 per cent compared with 2000 levels by 2020.<sup>14</sup>

<sup>14</sup> Australian Government. Department of Climate Change and Energy Efficiency, 2012, “Fact Sheet: Australia’s Emissions Reduction Targets,” <http://www.climatechange.gov.au/en/government/reduce/national-targets/~media/government/reduce/NationalTarget-Factsheet-20111201-PDF.pdf>.

Australia's unconditional target falls way short of what Australia's fair share of emission reductions would be under perfect compliance.<sup>15</sup> Its more ambitious mitigation targets are conditional upon the mitigation commitments of other states. Basically, the attitude reflected by these targets is this: Australia will not contribute (anything close to) its fair share to climate change mitigation unless and until others do their fair shares too. (The EU's target, though more ambitious, is similarly conditional upon the contributions of others).<sup>16</sup>

Is this attitude warranted? Could Australia (and other countries) argue that in the current situation states are not required to contribute their fair share to climate change mitigation, let alone more than their fair share? Under what circumstances is an agent justified in doing less than his fair share in a situation of partial compliance? In the following, let me briefly describe how 'defecting', or refusing to do one's fair share (or merely refusing to contribute, in the case that there is no pre-defined 'share') can sometimes be a good thing in contexts requiring cooperation.

<sup>15</sup> For one example of a burden-allocation scheme see WBGU (German Advisory Council for Climate Change), 2009, *Special Report: Solving the climate dilemma: the budget approach*,

<http://www.wbgu.de/en/publications/special-reports/special-report-2009/>.

<sup>16</sup> "By 2020, the EU has committed itself to: reducing its greenhouse-gas emissions by 20% (or even 30% in case an international agreement is reached that commits other countries in a similar way)."

[http://ec.europa.eu/research/energy/eu/policy/energy-and-climate-policy/index\\_en.htm](http://ec.europa.eu/research/energy/eu/policy/energy-and-climate-policy/index_en.htm).

Many other countries have made similar commitments: Japan has a conditional target of 25%, New Zealand of 10-20% and Norway even of 40% emission reductions compared to 1990 levels should there be a comprehensive global agreement on emission reductions past 2012.

[http://unfccc.int/meetings/copenhagen\\_dec\\_2009/items/5264.php](http://unfccc.int/meetings/copenhagen_dec_2009/items/5264.php).

Although defecting drives levels of cooperation down in the short term, it can drive them up in the long term. A player's retraction of his cooperation in a context where it is possible to make clear that the retraction is a punishment, rather than a first-order defection, can show others that there is no gain from defecting themselves, or from trying to take advantage of others. Making one's own cooperation conditional on others' is a way to signal an 'all or nothing' outcome: either the public good is obtained fairly, or it is not obtained at all. So long as the benefit of obtaining the desired good is worth more to a player than the benefit associated with her own defection, she will cooperate in circumstances where she believes that the conditionality of others' contributions is sincere. Sanctioning those who would put one at a comparative disadvantage is a positive means to discouraging unfair behaviour in future contexts.<sup>17</sup> In sum, defecting or refusing to contribute to a collective good can be the right thing if it motivates others to contribute and if it ensures fair cooperation.

But defecting or refusing to contribute can also be a bad move, namely in cases where it jeopardizes a morally important good. It can inspire others to defect too as it triggers people's aversion to exploitation and to ending up comparatively disadvantaged. This, in fact, seems to be one of the obstacles to far-reaching voluntary mitigation efforts prior to a binding global treaty: with a few exceptions, no country wants to end up at a comparative disadvantage. To the extent that defecting provides others with a reason to defect too, defecting may well be immoral depending on what is at stake. Global warming beyond 2°C is likely to have far-reaching negative consequences and it will harm many people. It seems fair to think that a capable agent's refusal

<sup>17</sup> I owe many of the ideas in this paragraph to Holly Lawford-Smith.

to take unilateral action is morally wrong if what is at stake is of such great moral significance and if it looks very likely that one's own refusal, instead of motivating others to contribute on fair terms, will merely result in their continuing failure to contribute. This is especially true if at the same time unilateral or oligolateral action is likely to have positive effects on the desired outcome and possibly motivate others to contribute too. Several countries have made their more ambitious mitigation targets conditional upon a comprehensive global climate agreement. Japan, New Zealand, Norway and the European Union (and many others) have committed themselves to substantial emission reductions if other countries make similar commitments in the context of a binding treaty. *Their willingness* to make these substantial contributions depends on the *willingness of other countries* to make similar contributions. Clearly, then, one country's mitigation commitment has an impact on other countries' mitigation commitments.

For the sake of clarity, let me contrast this situation with a similar, yet distinct, scenario. Sometimes, an agent's *ability* to make a significant contribution to a collective outcome depends on whether or not others make their contribution to that outcome. This is the case when a number of agents need to work together in order to perform an action. We sometimes speak of agents holding duties to act collectively.<sup>18</sup> In some of these cases, agents' individual contributions will not make a difference to the overall outcome unless all (or a substantially high number of)

<sup>18</sup> See Elizabeth Cripps, "Climate Change, Collective Harm and Legitimate Coercion," *Critical Review of International Social and Political Philosophy* 14 (2011), 171–193; Holly Lawford-Smith, "The Feasibility of Collectives' Actions," *Australasian Journal of Philosophy* 90 (2012), 453–467; Anne Schwenkenbecher, "Joint Duties and Global Moral Obligations," *Ratio* 26 (2013), 310–328; Bill Wringe, "Needs, Rights, and Collective Obligations," *Royal Institute of Philosophy Supplement* 80 (2005), 187–208.

agents contribute to it. Just imagine a situation where it takes four persons to lift a heavy armoire and only three people are present and it is clear that their combined effort will not suffice for lifting that armoire. If these facts are known to them then there is no point in them trying to lift it anyway.<sup>19</sup> If a lot is at stake (if, for example, a person is being crushed by that armoire) the three persons still have a duty to remedy the situation somehow, but they have no duty to lift their corner of the armoire. In such threshold-cases individual contributions to a collective outcome are in vain if an insufficient number of persons contribute.<sup>20</sup>

However, reducing GHG emissions is not a threshold-case: all individual efforts incrementally contribute to the collective outcome. If nothing any willing country did in order to bridge the emissions gap would have a significant effect, then it might be morally right for them to invest in adaptation only. But a willing country can be a difference-maker with respect to climate change mitigation. Individual states' contributions may globally impact emission reductions in numerous ways:

1. There is the direct impact on reducing GHG. If large economies and therewith big polluters such as the U.S. or China took the lead in emission reductions this would positively impact overall GHG concentrations.<sup>21</sup>

<sup>19</sup> For a similar example see H. Lawford-Smith, "The Feasibility of Collectives' Actions."

<sup>20</sup> Ibid.

<sup>21</sup> This formulation, however, is not entirely accurate: any reduction in GHG now will only have a delayed effect on the level of GHG accumulated in the atmosphere and an indirect impact on global warming and climate change. What we are talking about when talking about mitigation and GHG emission reductions are stabilization targets—namely levels at which it is desirable to stabilize GHG concentration in the atmosphere. The higher GHG levels in the atmosphere, the higher, roughly speaking, is the degree of global warming.

2. Emitters that are technologically advanced can make essential contributions to developing green technologies. Renewable or green technologies make mitigation more feasible.

3. Perhaps most importantly, there is the impact individual countries' actions may have on the political level. As mentioned above, substantial unilateral emission reductions are a significant step towards creating the conditions which are necessary for implementing ambitious global mitigation targets. It means to assure other countries of one's willingness to step up to one's duty, therewith warranting that they honour their conditional commitments. Given that several key countries' more ambitious mitigation commitments are conditional upon other countries' mitigation commitments, any key country which substantially reduces emissions domestically increases the chance that other countries implement more ambitious targets, too.

4. Unilateral mitigation—even by small economies and emitters—may be of symbolic value and serve as an example for the achievability of a low emission lifestyle. It deprives politicians of arguments for insisting on the economic or logistic or other impossibility or cost intensity of taking mitigation measures now. It makes it easier for other countries to follow down the same path. The more influential a country in the international political sphere the larger this indirect impact may be, while yet—again—even smaller countries and economies may well serve as a positive and inspiring example.

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However, the impact of emission reductions on the concentration of GHG in the atmosphere and on the degree of warming depends on several other environmental factors too.

In sum, defecting can be morally acceptable if contributing to a joint goal or collective outcome is pointless due to the other agents' refusal to contribute or if it is likely to secure fair cooperation in the long run. None of these seem to apply to the collective endeavor of bridging the emissions gap. With the existing gap in emission reductions a lot is at stake. A willing country's contribution to the problem can make a difference to the outcome. Hence, there are strong moral reasons for it to contribute regardless of what other countries are doing; the mere fact that one country is unwilling to do its share is no reason for other countries to refuse to do theirs.

#### IV

### **Taking Up the Slack in Situations of Partial Compliance**

In this section, I will defend the view that—with regard to the emissions gap—capable countries have a moral obligation to shoulder *more* than what their fair share would be if everyone else complied. Compliant and capable countries should take up part of the slack left by non-compliant capable countries—at least in the short run and within the limits of their capacity.

In what situations is an agent morally obliged to take up the slack left by some other agent(s)? To begin with, there are some cases where an obligation to take up the slack left by others is uncontroversial. If the additional burden is negligible or reasonably low while the expected gains are high, agents ought to do take up the slack even if this (slightly) exceeds their fair share of burdens. However, the emissions gap constitutes a different and more ambiguous scenario. Taking up the slack by reducing emissions substantially—possibly to zero—until 2020 is costly.



The expected gains from individual states' mitigation efforts *can* make a decisive difference to whether or not the emissions gap is being bridged, but no individual state can produce that outcome with certainty. Bridging the emissions gap, hence, appears to be no uncontroversial case and additional arguments are needed to show why taking up the slack in this case is morally obligatory.

I argue that the combination of two criteria—the situation being an injustice and it being irreversible—strengthens the argument for taking up the mitigation slack. In my view, the failure to bridge the emissions gap would constitute a particularly severe moral failure precisely because it combines these two features: it would be a *major injustice* committed against future generations which is very likely *irreversible*.<sup>22</sup> The actions we take—or refuse to take—now will once and for all determine the minimum level of global warming and how bad the consequences will be for those who live later.<sup>23</sup>

As to the first criterion, climate change may well be a case in which the non-provision of a collective good or outcome constitutes an injustice, violating the rights of the prospective

<sup>22</sup> David Miller thinks that these are two factors that may impact on our judgment of non-compliance cases. While he ultimately argues that in the case of climate change mitigation polluters have a so-called “humanitarian obligation” to take up the slack, he does not consider this obligation to be a stringent, enforceable moral duty. According to Miller, it gives complying agents good reasons to take up the slack, but they may not legitimately be forced to do more than their fair share. David Miller, “Taking Up the Slack? Responsibility and Justice in Situations of Partial Compliance,” in *Responsibility and Distributive Justice*, edited by Carl Knight and Zofia Stemplowska (Oxford: Oxford University Press, 2011), 230-245, at 243ff.

<sup>23</sup> H. Shue, “Responsibility to Future Generations and the Technological Transition.”

victims and imposing avoidable harm onto them.<sup>24</sup> Who are those prospective victims? Future generations in all parts of the world will be affected. However, most affected now and in the future will be those who have the least means to adapt to a changing climate and protect themselves against the consequences of global warming. The poorest happen to be also the ones who least contributed to the problem of climate change. Without far-reaching action to limit global warming and to help those who are unjustly affected by it, emitting GHG will become (or—for that matter—continue to be) a cynical redistribution mechanism: those who are well-off will be living at the expense of those who are not yet born and those who are least well-off.

Some have argued that the idea of committing an injustice towards future generations is problematic, because duties owed to future persons are not owed to anyone in particular. The intuition that acts can only be bad if they are bad for someone has first been comprehensively discussed by Derek Parfit.<sup>25</sup> Moreover, the identity of future persons seems to depend on acts in the present and past.<sup>26</sup> Climate change could then be said to harm no one as those suffering from its consequences in the future would not have existed or would have had different identities had the past been different, for example, had the world taken action on climate change mitigation before. This is part of what is called the ‘non-identity problem’:

<sup>24</sup> See also D. Miller, “Taking Up the Slack? Responsibility and Justice in Situations of Partial Compliance,” 236. For arguments from collective harm see E. Cripps, “Climate Change, Collective Harm and Legitimate Coercion.”

<sup>25</sup> Derek Parfit, *Reasons and Persons* (Oxford: Clarendon Press, 1987), 363.

<sup>26</sup> *Ibid.*

Put simply, the puzzle is that actions or social policies that will lower future quality of life will harm few, if any, members of future generations because they are also necessary conditions of these people coming into existence.<sup>27</sup>

I will not go into this problem here, which has been discussed in detail elsewhere.<sup>28</sup> I believe that the non-identity problem does not seriously affect the argument that current generations have duties to mitigate climate change. According to Henry Shue,

[i]f one has any responsibilities to human beings whose interests one can significantly affect, then one has these responsibilities to any such human beings who happen to live in future times, whatever their numbers and identities.<sup>29</sup>

This takes us to the second feature that a failure to bridge the emissions gap would have: reversibility of non-compliance. Failing to act in time is making a choice that determines how bad climate change becomes at its worst. Shue argued that

The irretrievability of lost historical opportunities matters in this case because the opportunity that is now being lost is to prevent climate change from becoming as extreme as it will otherwise probably become.” And

<sup>27</sup> E. A. Page, “Distributing the burdens of climate change,” 132.

<sup>28</sup> The literature on the non-identity problem is extensive. For a discussion of possible solution to the puzzle see for instance Matthew Hanser, “Harming Future People,” *Philosophy & Public Affairs* 19 (1990): 47–70; Jeffrey Reiman, “Being Fair to Future People: The Non-Identity Problem in the Original Position,” *Philosophy & Public Affairs* 35 (2007), 69–92; Rivka Weinberg, “Identifying and Dissolving the Non-Identity Problem,” *Philosophical Studies* 137 (2008), 3–18.

<sup>29</sup> H. Shue, “Responsibility to Future Generations and the Technological Transition,” 271. On the moral aspects of the intergenerational dimension of climate change see also Stephen Gardiner, *A Perfect Moral Storm: The Ethical Tragedy of Climate Change* (Oxford: Oxford University Press, 2011), 144ff.

“our failure might well set the bottom limit on how bad things finally become.”<sup>30</sup>

If the decision by non-compliers is reversible, compliers can choose between taking up the slack and getting non-compliers to contribute.<sup>31</sup> If their decision is non-reversible, compliers can only choose between taking up the slack or not. The problem with climate change mitigation is that even if current non-compliers can be brought back into compliance at a later stage, this will not fully avert the harm. That is, the effect of later emission reductions will not be equivalent to that of prompt reductions and future adaptation is not morally *en par* with swift mitigation. No matter how much we spend on adaptation, it will not avert the (additional) extreme weather events and natural disasters to come. It will only put us in a better position to deal with them.

The longer capable agents hesitate to take voluntary action while waiting for others to do their share, the less the position of non-compliers becomes reversible.<sup>32</sup> The longer one hesitates to reduce GHG, the higher is the likely future concentration of GHG in the atmosphere.<sup>33</sup> Not only will countries have to go to substantially greater lengths later in order to mitigate global warming. It means something worse than that: whatever is done at a later stage will—most likely—be insufficient for limiting global warming to 2°C—a temperature increase which will very

<sup>30</sup> H. Shue, “Responsibility to Future Generations and the Technological Transition,” 279.

<sup>31</sup> D. Miller, “Taking Up the Slack? Responsibility and Justice in Situations of Partial Compliance,” 237.

<sup>32</sup> See for instance H. Shue, “Responsibility to Future Generations and the Technological Transition”; Nicholas Stern, “Stern Review on the Economics of Climate Change.”

<sup>33</sup> See the different mitigation scenarios by UNEP 2011.

likely trigger irreversible threshold effects.<sup>34</sup> The decision to contribute to climate change mitigation is certainly reversible, but the consequences of deciding against taking substantive (additional) emission reductions now are not. Mitigating climate change now is not equivalent to action taken later. It is in this sense that the decision to not reduce GHG *now* is not reversible.

Under the prevailing circumstances, complying agents only have the choice between taking up (some of) the slack left by others or not. Out of these two options, complying agents have very strong reasons to choose the first: to take up (some of) the slack. The harm that they can possibly avert would amount to a major injustice and it is urgent enough to warrant immediate action. To wait until (all) other countries contribute their fair shares is presumably counterproductive. Above all it is large economies and powerful countries that can have a significant influence on whether or not we will be able to mitigate enough in time.

## V

### The Objection From Unfairness

My argument triggers the following objection: One might argue that it is wrong to require agents to take up the slack of emission reductions because it is unfair. There are two versions of this argument: first, the argument from comparative unfairness; second, the argument from non-comparative unfairness.<sup>35</sup> David Miller formulates the first unfairness objection as follows:

<sup>34</sup> UNEP 2011 and UNEP 2012.

<sup>35</sup> Sabine Hohl and Dominic Roser, “Stepping in for the Polluters? Climate Justice Under Partial Compliance.” *Analyse & Kritik* 33 (2011), 477–500.

Someone who contributes but refuses to take up the slack might defend herself by pointing out that she is doing her fair share and that to do more would put her at an unfair disadvantage relative to others (indeed at a double disadvantage relative to the non-compliers).<sup>36</sup>

However, as Sabine Hohl and Dominic Roser as well as David Miller point out, this objection is implausible. If being put at a relative disadvantage was a good enough reason to defect then this reason would not only apply to situations in which an agent takes up the slack left by others, but also to situations in which he does his fair share while others defect. As such, the argument from comparative unfairness would—if taken seriously—provide an agent with a reason to defect whenever others do.<sup>37</sup>

According to the second and more plausible version of the unfairness argument, it is unfair to impose costs on someone for discharging a duty that is not his duty in the first place. Hohl and Roser call this the “*extra burden interpretation*” of the unfairness

<sup>36</sup> D. Miller, “Taking Up the Slack? Responsibility and Justice in Situations of Partial Compliance,” 236.

<sup>37</sup> Henry Shue—in his 2011 article “Face Reality? After You!? A Call for Leadership on Climate Change”—argues that this insistence on a principle of comparative fairness really just covers up that fact that some countries are not even doing their minimum share: “Both sides tend to defend their bargaining position as representing nothing worse than an insistence on not doing more than one’s fair share until others have done their fair share [...]. But this is an inaccurate characterization of the situation for the United States as well as for a number of other parties. It is one thing to refuse to do more than one’s own fair share until others have done, or have agreed to do, at least their fair share. However, it is an entirely different matter to refuse to do even one’s own share [...] until others have done or have agreed to do so as well” H. Shue, “Face Reality? After You!? A Call for Leadership on Climate Change,” 22-23). Shue thinks that wealthy countries should contribute the equivalent of this share even if the other countries do not. He adds that with an insistence on justice (“I will only give in if you do”) wealthy countries have deadlocked the debated in some kind of a catch 22: they have perverted justice into paralysis (Ibid., 23).

involved in taking up the slack”.<sup>38</sup> It is not the relative disadvantage of the agent taking up the slack compared to the relative advantage of the defector that account for the unfairness in the above described situations, but the fact that the compliers are burdened “with extra costs that they would not have had to bear if everyone had fulfilled their responsibility.”<sup>39</sup>

How can one respond to the second version of the unfairness argument? One could argue that requiring agents to take up the slack is often unfair, but that there are situations in which what is morally right is simply unfair. Fairness is always a morally relevant concern, but it is not always an overriding consideration. It may be overridden as a reason against a particular distribution of burdens if danger is imminent and the non-provision of the good is irreversible. This is provided that the unfairness imposed on the complying agent does not exceed the unfairness imposed on the victim of the original injustice<sup>40</sup>. In the case of bridging the emissions gap, does that appear to be the case?

Let us briefly look at the burdens imposed on those who take up the slack. Reducing emissions beyond what one’s fair share will—in the short run—impose relatively high costs on a state and therewith on its citizens and residents<sup>41</sup>. Measures such as substituting fossil-fuel based energy with renewable energy, replacing cars with combustion engines with electric cars, improving energy efficiency, etc. require high upfront investment

<sup>38</sup> S. Hohl and D. Roser, “Stepping in for the Polluters? Climate Justice Under Partial Compliance,” 484.

<sup>39</sup> Ibid.

<sup>40</sup> Fairness seems to become more important the greater the disadvantage suffered by the over-complier.

<sup>41</sup> According to Zero Carbon Australia, the costs for transforming Australia’s stationary energy sector into a zero carbon energy sector are \$37 billion for the duration of 10 years, or “the equivalent of a stimulus to the economy of 3% of GDP.” Zero Carbon Australia, Stationary Energy Plan 2010, *Synopsis*, 17.

costs. Economic incentive mechanisms such as an emissions-trading scheme or a carbon tax may lead to domestic energy price increases which again are likely to increase domestic production costs and make a country's products less competitive on an international market. This could have effects on domestic employment, salaries, job security, etc. which would impact on individual citizens' well-being.

However, it is not that clear that mitigation measures beyond a country's fair share will be only costly while producing no further benefits. Blok *et al.* who examine 21 initiatives that would trigger GHG emission reductions of around 10 Gt CO<sub>2</sub>e argue that these initiatives would also “generate significant ‘green growth’ benefits, stimulating economic development based on environmentally sound solutions.”<sup>42</sup> On a global level, the economic benefits of early mitigation are palpable: according to economist Nicolas Stern:

Using the results from formal economic models, the Review [The Economics of Climate Change] estimates that if we don't act, the overall costs and risks of climate change will be equivalent to losing at least 5% of global GDP each year, now and forever. If a wider range of risks and impacts is taken into account, the estimates of damage could rise to 20% of GDP or more. In contrast, the costs of action—reducing greenhouse gas emissions to avoid the worst impacts of climate change—can be limited to around 1% of global GDP each year.<sup>43</sup>

At the moment, the countries which invest early in renewable energies have the double advantage of being able to export technology and expertise to other countries now and in the future, and of becoming increasingly independent of finite natural

<sup>42</sup> K. Blok, N. Höhne, K. van der Leun and N. Harrison, “Bridging the Greenhouse-gas Emissions Gap,” 1.

<sup>43</sup> N. Stern, “Stern Review on the Economics of Climate Change,” Summary of Conclusions.



oil and gas resources. Furthermore, there are local health benefits from replacing conventional fossil-fuel based technologies that often generate significant air, soil and water pollution with clean energy. Smart solutions, local energy infrastructure and governance may counterbalance a lot of the burden of investment into renewable energies. In sum, taking on additional mitigation burdens in the sense of transforming one's economy into a low-emission or zero-emission economy on a faster rate involves significant costs for that state, but it is not clear that these costs are necessarily overly demanding or else burden these economies beyond acceptable limits. Eventually, all states have to reduce their emissions to zero or close to zero. States that take up the slack would merely do so faster and hence have a higher upfront investment and possibly—but not necessarily—a less smooth transition to a low-carbon or zero-carbon economy. In sum, the unfairness from taking up the slack of emission reductions does not necessarily exceed the unfairness towards future victims of climate change.

In contrast, continuing to drive climatic change poses an injustice against those who will suffer its consequences through no fault of their own. These consequences will very likely affect the wellbeing of millions of people in the future and are already affecting a large number of people in the present. Some of the likely impacts of global warming beyond 2°C will be very destructive.<sup>44</sup> These harmful consequences are—to some degree—avoidable, yet those in a position (and under an obligation) to prevent them refuse to act.

Provided sensible mitigation policies are implemented, the injustice against the victims of climate change probably exceeds most countries' costs of doing more than their ideal fair share of emission reductions. In each individual case, however, this would

<sup>44</sup> IPCC 2007.

depend on the scope of any particular country's mitigation contribution relative to its capacity to mitigate. Hohl and Roser argue that there are at least some countries which have the capacity to mitigate beyond what their fair share would be under ideal conditions.<sup>45</sup> For these countries, taking up the slack would not be overly demanding. Moreover, and this is especially true for large emitters, their emission reductions beyond what is their fair share can contribute significantly to averting the catastrophic consequences of global warming in the future.

Finally, let me turn to another version of the unfairness-objection, paralleling an argument brought forward by Liam Murphy in his book *Moral Demands in Nonideal Theory*.<sup>46</sup> Murphy develops the 'collective principle of beneficence' according to which, when it comes to benefiting others "each agent is required to sacrifice only as much as will make it no longer true that his level of expected well-being is higher than it would be under full compliance."<sup>47</sup> Murphy holds that a person need never contribute more to a collective endeavour (aimed at bettering the lives of others) than she would have to under full compliance but within the constraint that she do as much good as possible.<sup>48</sup> I cannot fully rehearse his argument here, but while Murphy admits that the "collective principle of beneficence leaves the victims of non-compliance worse-off than they would be if the compliers took up (some of) the slack,"<sup>49</sup> he nevertheless thinks that an increased

<sup>45</sup> S. Hohl and D. Roser, "Stepping in for the Polluters? Climate Justice Under Partial Compliance."

<sup>46</sup> Liam B Murphy, *Moral Demands in Nonideal Theory* (New York: Oxford University Press 2003).

<sup>47</sup> *Ibid.*, 86.

<sup>48</sup> *Ibid.*, 86-97.

<sup>49</sup> *Ibid.*, 92.

need for beneficence due to other agents' non-compliance does not increase the level of required sacrifice for complying agents.<sup>50</sup>

Applying this argument to the case of emission reductions, one could thence reject a duty to take on more than one's ideal fair share of climate change mitigation because it requires complying agents to assume responsibilities that are not theirs. And indeed, it seems counterintuitive that complying agents who do not take up the slack left by others act wrongly just in the same way that non-compliers act wrongly. After all, the defecting agents should be the ones to blame.

However, there are a few problems with this objection. Let me make two points to that extent. Firstly, I doubt that the scenario that Murphy sketches is morally equivalent to the problem of the emissions gap. There is a difference between what is morally mandatory in one-off (emergency) situations and what is morally mandatory in recurring situations or with regard to persistent moral problems. The question of the requirements of a duty of beneficence, as Murphy tackles it, makes most sense as a question about what is morally mandatory in the long run, with regard to a persistent problem or a recurring situation. It may not be the right question about what one ought to do in a one-off situation. And, in fact, when Murphy applies the principle of beneficence that he proposes to an emergency situation this produces highly counterintuitive results.<sup>51</sup> The *urgent* necessity to bridge the

<sup>50</sup> Ibid., 125.

<sup>51</sup> Murphy examines the following challenge to the collective principle: "If we have two potential rescuers and two drowning children, but one rescuer fails to do her share, doesn't the good rescuer have to rescue both children?". L.B. Murphy, *Moral Demands in Nonideal Theory*, 127. He agrees that needs that arise in emergency situations are not treated specially by the collective principle. He argues that in cases where two children are drowning in a shallow pond and two potential rescuers are present, with one refusing to do his share, saving the second child too is not the willing rescuer's moral duty: "[A] person inclined to

emissions gap *now* in order to ensure that global warming remains below 2°C constitutes a type of emergency because the window of opportunity for averting highly undesirable outcomes is closing and the consequences of delaying action are likely to be irreversible. The question of what any individual state ought to do *now* needs to be answered differently from the question of how states ought to act (and distribute mitigation burdens) *in the long run*. While considerations of fairness in distribution should have great weight in long term arrangements, they may have less weight in exceptional situations and emergencies.

Second, the duty to mitigate climate change is not a duty of beneficence. Arguably, it arises from a duty not to harm which many would hold to be more stringent than a duty of beneficence. Emitting GHGs can be considered a harmful activity. Even if individual emissions are not harmful in isolation, the aggregation of emissions can be seen as (a type of collective) harm.<sup>52</sup> I will not argue for the harmful character of emissions here, as it has been discussed in much detail elsewhere.<sup>53</sup>

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rescue the first child would very likely also be strongly inclined to rescue the second. In doing so, she may act beyond the call of duty, but she acts on motives she ought not to try to rid herself of.” (Ibid., 132) He attributes our strong intuitions about having to save both children to a negative emotional reaction to the character of a person who fails to do so: “It seems plausible to think that our strong negative reaction to failures to rescue is based not so much on a sense that the agent acted terribly wrongly but on a sense that his emotional indifference to the victim’s plight shows him to have an appalling character.” (Ibid., 133).

<sup>52</sup> Walter Sinnott-Armstrong, “It’s Not My Fault: Global Warming And Individual Moral Obligations,” in *Perspectives on climate change*, edited by Walter Sinnott-Armstrong and Richard Howarth, (New York: Elsevier 2005), 293–315.

<sup>53</sup> John Broome, *Climate Matters: Ethics in a Warming World* (New York: Norton, 2012); E. Cripps, “Climate Change, Collective Harm and Legitimate Coercion”; James Garvey, *The Ethics of Climate Change: Right and Wrong in a*

Fairness is an important criterion for determining how we should distribute burdens in collective endeavours, but it does not have lexical priority. It is *a* reason against taking up the slack in situations of partial compliance, but it is not always an overriding reason. However, having established that considerations of fairness do not deliver strong reasons for refusing to take up the slack does not mean to drop them altogether. Rather, given the urgency of the problem, they are temporarily deferred. Taking on additional burdens at a certain moment in time may qualify an agent for compensation or a corresponding burden-relief in the future. In the long run, all countries must reduce their emissions to (close to) zero. States that mitigate more now may be allowed to mitigate more slowly in the future while their total emissions remain the same or else they could be compensated for the emissions they did not produce or be relieved from part of their adaptation burden. Defecting states acquire a *pro tanto* obligation to restore fairness later and to compensate willing agents. Some may argue that subsequently restoring fairness and recovering some of the additional mitigation costs will not be feasible or likely. True, but what follows from this? Such considerations have implications for a state's capacity to reduce emissions beyond its ideal fair share, but not for its obligation to take on extra burdens within the limits of its capacity.

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*Warming World* (London: Continuum 2008); Anne Schwenkenbecher, "Is there an obligation to reduce one's individual carbon footprint?" *Critical Review of International Social and Political Philosophy* 17 (2014), 168-188; Henry Shue, "Responsibility to Future Generations and the Technological Transition"; Peter Singer, "Climate Change as an Ethical Issue," in Moss: *Climate Change and Social Justice*, (Carlton, VIC: Melbourne University Publishing, 2009), 38-50 and "One Atmosphere," in Stephen Gardiner, Simon Caney, Dale Jamieson and Henry Shue, *Climate Ethics: Essential Readings* (Oxford: Oxford University Press 2010).

## VI

### Conclusion

I have argued that given the current emissions gap capable states should voluntarily reduce their GHG emissions beyond what their fair share of emission reductions would be under ideal conditions regardless of whether other states do the same, but with a view to motivating them to follow in the same path. Taking on a greater burden *now* entitles states to compensation later. More powerful states will be in a better position to recover their (additional) costs from defecting states, which means that they have even less justification to refuse to do more than their fair share now. But even if taking up the slack is unfair towards the willing slack takers in the long run, it is the morally right thing to do in the current situation. Furthermore, the greater a state's economic and technological capacity to reduce its emissions, the greater its duty to take on mitigation burdens beyond its ideal fair share.

There are a number of problems that the discussion in this article relates to, but that could not be given much attention. One question is how the present argument relates to the problem of adaptation. Generally speaking, prevention of harm should have priority over adapting to harm or compensating for it. If we can avoid harm at a reasonable cost we should do so rather than impose it on others and then help them adapt to it. While present and future adaptation costs for existing and non-avoidable future harm are inevitable we should not give up mitigation in favour of adaptation.<sup>54</sup>

<sup>54</sup> See also H. Shue, "Face Reality? After You! A Call for Leadership on Climate Change," 19; Steve Vanderheiden, "Globalizing Responsibility for Climate Change," 68.

Furthermore, the present article did not discuss mitigation obligations of agents other than states. Undoubtedly, states are best positioned to make a significant difference to global emissions through adopting domestic legislation to that effect, funding research on and development of renewable energy technologies, or by being a global leader on climate change. Yet, individual citizens, corporations, and other collective entities capable of taking action on climate change are not off the hook. Arguably, if states do not comply with their mitigation duties domestic and supranational collective agents and, ultimately, individuals are the next duty-bearers in line.<sup>55</sup>

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<sup>55</sup> See also E. Cripps, "Climate Change, Collective Harm and Legitimate Coercion"; Anne Schwenkenbecher, "Is there an obligation to reduce one's individual carbon footprint?". The possibility of multi-level action on climate change has been discussed i.e. by Elinor Ostrom in "Polycentric systems for coping with collective action and global environmental change," *Global Environmental Change* 20 (2010), 550–557.

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