

# Distributive Justice in the Paris Climate Agreement

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## *Introduction*

Lately the ethical dimensions of climate change have been getting more attention than ever before. For example, in the past few years, philosophers and other scholars have published several books on ethical issues related to climate change—including Stephen Gardiner’s remarkable *A Perfect Moral Storm: the Ethical Tragedy of Climate Change* the anthology *Climate Ethics: Essential Readings*, the first of its kind—as well as many journal articles and book chapters.<sup>1</sup> And just last year, several religious statements emphasizing the moral imperative to address the threat of climate change were published, including the Pope’s encyclical on climate change and the *Islamic Declaration on Global Climate Change*.<sup>2</sup>

Still relatively rare, however, are the detailed ethical analyses of particular policy proposals we need in order to know whether or not our policies align with the demands of justice. One notable recent such analysis is an attempt made by Glen P. Peters, Robbie M. Andrew, Susan Solomon, and Pierre Friedlingstein to determine whether or not the Intended Nationally Determined Contributions (INDCs) submitted by the US, the EU, and China ahead of the 21st Conference of the Parties in Paris really are as “fair and ambitious” as the Lima Call for Climate Action makes clear they were supposed to be.<sup>3</sup> Peters et al conclude that not one of these countries is doing its fair share.

Without a doubt, the Peters et al analysis is a laudable first step on the path to addressing the important question as to whether or not the Paris agreement justly distributes the burdens of mitigation. But the conclusions of analyses like theirs are only as plausible as the ethical assumptions on which they rely, and as we will see, those on which Peters et al rely are not especially plausible. The present analysis is an attempt to address this shortcoming of the Peters et al analysis. Using what I will argue is a considerably more plausible view of what a fair distribution of the mitigation burden would look like, the Climate Equity Reference Framework, I in effect repeat the analysis, finding that while the US and the EU are indeed far from doing enough, China is in fact doing *more* than enough.

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I begin with a brief explanation of the problems with the analysis by Peters and his colleagues.

## ***Problems with the Peters et al Analysis***

Peters et al begin by calculating the amount of carbon that can still be emitted if we want to have a 66% chance of keeping total warming to 2 degrees celsius or less, what we might call the carbon budget. They then draw on two different views of what it would mean for an international climate agreement to be fair to determine whether or not the US, the EU, and China have in effect laid claim to more than their fair share of the carbon budget by means of their INDCs. According to the first such view, which Peters et al refer to as “Inertia,”

*Inertia:* the carbon budget should be distributed to countries in proportion to their share of current emissions, such that the countries that currently emit the most get the largest share of the remaining carbon budget.

According to the second (call it “Equality”),

*Equality:* the carbon budget should be distributed to countries in proportion to their populations, each country getting the same amount of carbon per person.<sup>4</sup>

As shown in Figure 1 below, Inertia entails that while the US and the EU are doing almost enough, China is doing far less than it ought to be, and Equality entails that none of these countries is doing anywhere near enough, especially the US and China.

Interesting as this analysis is, it cannot reasonably be said to tell us anything about whether or not these countries are doing as much as they ought to be. For as I indicated earlier, both Inertia and Equitable are implausible understandings of what it would take for the burdens of mitigation to be distributed equitably.

Presumably the appeal of Inertia is that it does not force any country to reduce emissions at a rate that is either impractical or unduly onerous. But as becomes clear when we consider in detail how Inertia would distribute the burdens of mitigation, this advantage is outweighed by serious problems.

Consider, for example, that Inertia accords to China about three times as large a share of the carbon budget as it does to India.<sup>5</sup> This way of dividing up the carbon budget is objectionable for two main reasons. First, by denying India the opportunity to emit the additional carbon it would need to emit in order to do so, it in effect refuses India the right to develop, a right guaranteed by the United Nations Framework Convention on Climate Change (UNFCCC).<sup>6</sup> Perhaps there are circumstances that might justify refusing some country the right to develop, but the mere fact that they do not presently emit the levels of carbon associated with development is not one of them.

And second, this way of distributing the carbon budget is exactly the *opposite* of what is enjoined by two principles widely thought salient in this context. According to the first (call it “Responsibility”),

*Responsibility*: those most responsible for creating the problem ought to do the most to solve it.

According to the second (call it “Capacity”),

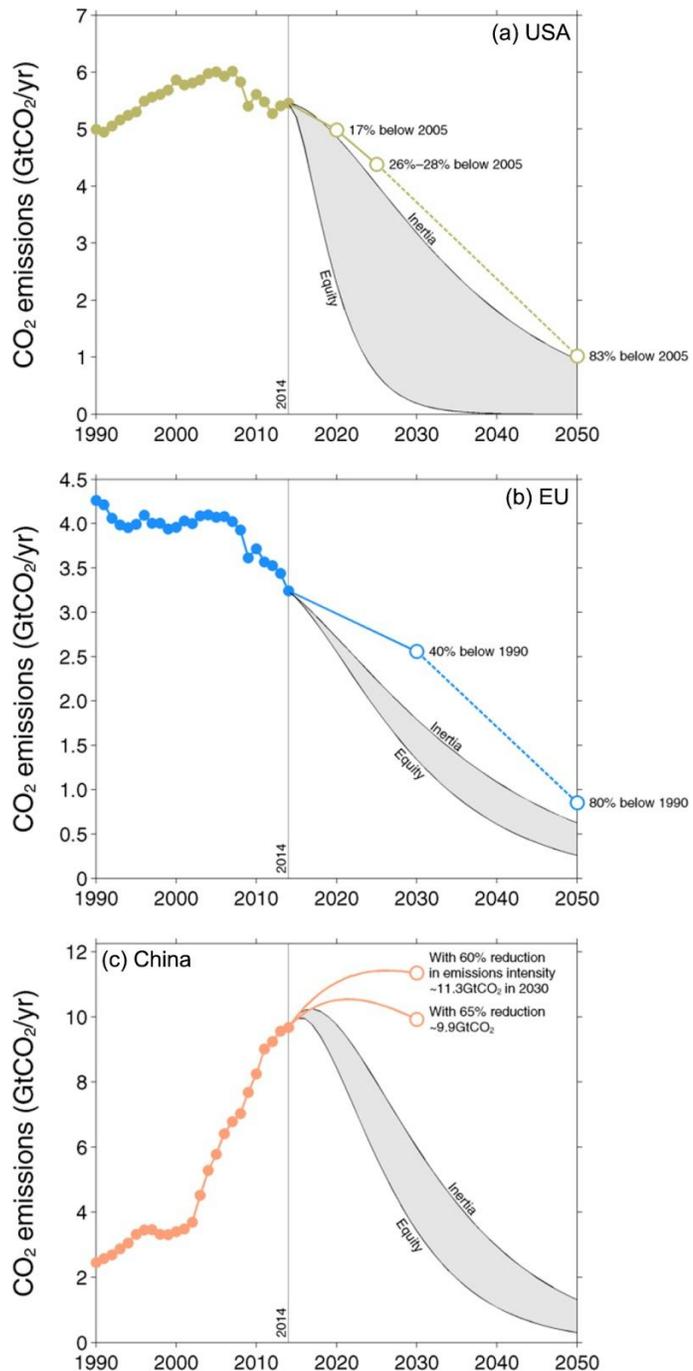


Figure 1. Source: Peters, et al, “Measuring a Fair and Ambitious Climate Agreement.”

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*Capacity*: those most capable of solving the problem ought to do the most to solve it.

Since China's cumulative emissions since 1990 are more than three times India's,<sup>7</sup> Responsibility entails that China should be forced to shoulder much more of the burden of mitigating the effects of climate change. And since the Chinese are much wealthier than the Indians--in 2014, per capita GDP was \$13,200 in China but only \$5,800 in India<sup>8</sup>--Capacity entails the same conclusion. Instead, though, it is India that has it harder under Inertia: while China, which has contributed significantly more to the problem and is far more capable of investing in new technologies and building new infrastructure to reduce emissions, is allowed to decrease its currently much higher level of emissions gradually, India is forced to remain in poverty. Moreover, it is worth saying, Inertia does not have this consequence only in this particular case but in all relevantly similar ones as well.

It seems clear, then, that we should reject Inertia: no distributive principle that flouts Responsibility and Capacity as flagrantly as Inertia could possibly be correct.<sup>9</sup>

At least initially, Equality can easily seem more plausible than Inertia, but it too has serious faults. First, although it does not have the unfortunate tendency to entail the opposite of Responsibility, it does basically ignore that principle, distributing the carbon budget not in accordance with historical responsibility but in proportion to a country's population. Second, like Inertia, it has the effect of denying undeveloped countries the opportunity to develop, as Paul Baer has noted: "a precautionary budget of 1000 GtCO<sub>2</sub> through 2050--a benchmark associated with a high probability of keeping global temperature increase below 2°C--implies average per capita emissions around 3 tCO<sub>2</sub> per person per year or less, while no country has industrialized with less than about 8 tCO<sub>2</sub> per capita annually."<sup>10</sup> And finally, Equality is just ill-motivated: not only is there no good reason to think justice demands that carbon emissions rights themselves be equally distributed; in addition, there just does not seem to be anything such that (a) it is plausible that it ought to be so distributed and (b) it could not be if carbon emissions were not also equally distributed.<sup>11</sup>

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These considerations make clear that, if we really want to know whether or not the INDCs represent a fair distribution of the mitigation burden, we need a different, more plausible understanding of what that such a distribution would look like than any considered by Peters et al.

## ***The Climate Equity Reference Framework***

The Climate Equity Reference framework (CERf) developed by Paul Baer, Tom Athanasiou, Sivan Kartha, and Eric Kemp-Benedict is just that.<sup>12</sup> The basic idea behind CERf--a recent generalization of the well-known Greenhouse Development Rights framework--is to come up with a number that represents the portion of the burdens of addressing climate change for which each country is responsible. This number, which the framework's developers call the Responsibility and Capacity Index (RCI), can then be used in either of two ways.<sup>13</sup> On the one hand, the RCI could be seen as the percentage of total greenhouse gas (GHG) emissions reductions for which a given country is responsible, given some particular emissions reduction goal. On the other, it could be seen as the percentage of the total cost of adaptation, mitigation, loss and damages, or all three for which a given country is responsible.

The RCI for a given country is calculated in two stages.<sup>14</sup> First, the extent to which each country is both capable of addressing and responsible for climate change is determined. Capacity is calculated as follows. First, a "development threshold" is established an individual's income below which is not counted toward a country's capacity. The point of doing this is to protect those with very little from having to give up what they cannot afford to spare. The framework's developers also provide for the possibility of setting a luxury threshold, above which 100% of a person's income is counted toward capacity and responsibility. (In between the development and luxury thresholds, a linearly increasing amount a person's income is so counted.) The effect setting a luxury threshold is to shift obligations up the global income scale. Having set these thresholds, population and income distribution data for the relevant country is used to determine the amount of income in that country that lies above the development threshold; if a luxury threshold is used, this same data is used to to determine the amount of income between the development and luxury thresholds and above the

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latter. The resulting number represents the country's capacity. The purpose of doing things this way is to ensure that the wealthier citizens of poorer countries are and the poorer citizens of richer countries are not made to shoulder the burdens of addressing climate change.

Responsibility is determined in a similar way, as Baer et al explain: "First, we assume that emissions are linearly proportional to income within a country; then, based on the total CO<sub>2</sub> emissions of a country since 1990, we divide them into an 'above the threshold' fraction proportional to capacity, which is counted as responsibility, and a 'below the threshold' fraction, which is excluded."<sup>15</sup> This way of doing things has the effect of shielding the poor from unwarranted blame. The rationale for disregarding pre-1990 GHG emissions is that, since that is the year in which the first IPCC report was published and so the first year (or anyway one of the first years) in which anyone could reasonably have been expected to have understood the relevant consequences of emitting GHGs, it is unreasonable to hold countries accountable for emissions before that year.

Once a country's capacity (C) and responsibility (R) have each been determined, Baer et al combine the resulting numbers to form the RCI using a simple weighted sum,

$$RCI = aC + bR,$$

where  $a$  and  $b$  represent the weight accorded to capacity and responsibility, respectively. By stipulation,  $a + b = 1$ .

In addition to making central the two principles, Capacity and Responsibility that, we saw, Inertia and Equality ignore or contradict, the CERf has the distinct advantage of being structured so as to ensure that no country is asked to shoulder so much of the burden of addressing climate change that it is effectively refused the right to develop.<sup>16</sup> Of particular relevance for present purposes is the fact that, in contrast to Inertia and Equality, the CERf distributes the burdens of mitigation such that countries are not expected to reduce their own emissions levels below those associated with the development threshold.

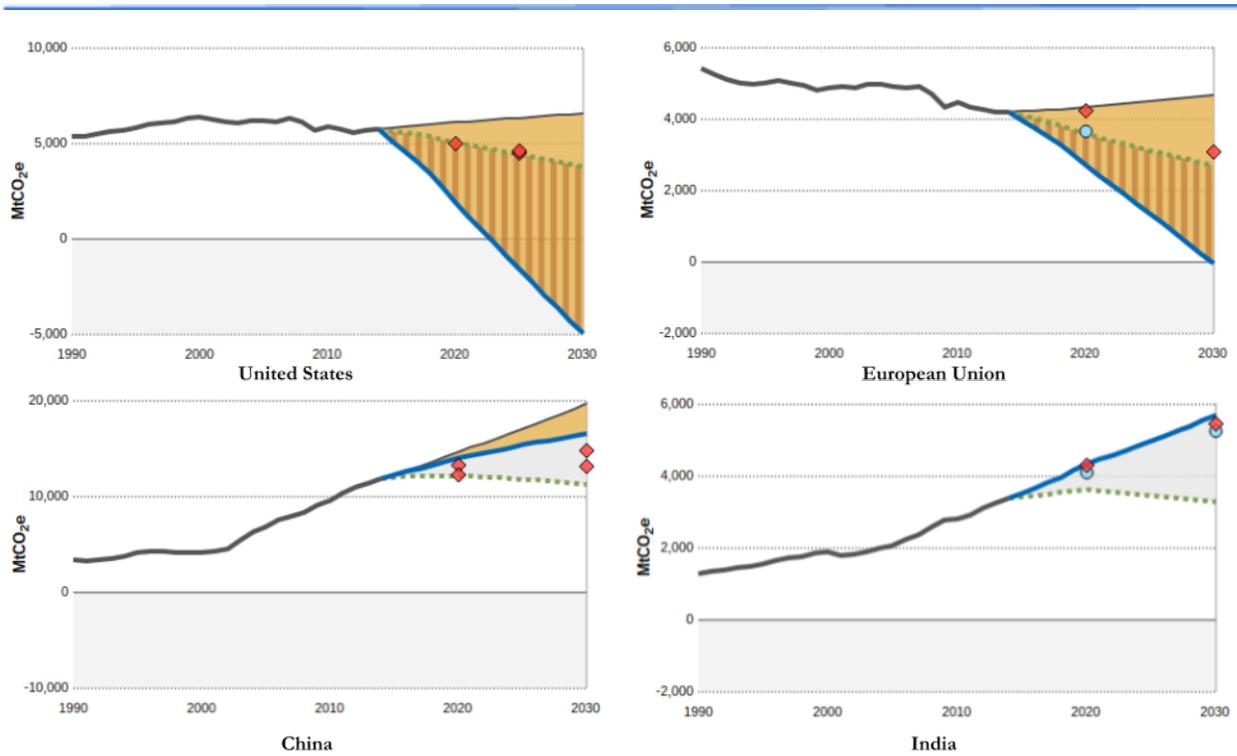
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Of course, the CERf is but one of many possible views about how the burdens of addressing climate change should be distributed,<sup>17</sup> and it is not uncontroversial.<sup>18</sup> I have chosen to use it for three reasons. First, while it is not perfect, it is clearly a better option than either Inertia or Equality, and so, at the very least, it gets us closer to the truth than can those two distributive principles. Second, I am not aware of any attempt to translate what reasonable concerns there are about the CERf into a useful--that is, quantifiable--alternative framework, and so, as far as I can tell, the CERf is the best alternative on offer. Finally, the CERf framework has the distinct advantage of being linked up with the online Climate Equity Reference Calculator developed to make analyses using the CERf exceedingly easy and transparent.<sup>19</sup>

So: what happens when we re-run Peters et al's analysis using the CERf rather than Inertia or Equality?

## ***Results***

In running the numbers, I have of necessity made several assumptions, none of which is likely to be uncontroversial, but all of which will, I hope, strike readers as at least plausible. I have chosen to set the development threshold to \$7,500, roughly the global poverty line calculated for the World Bank by Lant Pritchett.<sup>20</sup> Setting the development threshold here exempts about 88% of the world's population from responsibility to contribute to mitigation efforts and helps to ensure that the resulting distribution does not unduly burden those who are still struggling to meet their basic needs.<sup>21</sup> I have also chosen to use a luxury threshold income of \$32,500, since incomes at or above that level are in the top 1% globally.<sup>22</sup> I follow Baer et al in setting the year after which countries are held responsible for emissions to 1990 (for the reasons mentioned above), and I follow Peters, et al in basing the emissions reduction target on the goal of keeping total warming to 2 degrees celsius or less (with a 66% probability). Finally, in addition to the US, the EU, and China, I have also chosen to consider India, another of the world's most prominent emitters. The results are summarized in Figure 2 below.<sup>23</sup>



**Figure 2.** Thick dark grey lines represent historical GHG emissions, and thinner grey lines represent business as usual (BAU) emissions. Dark blue lines represent the emissions pathway each country ought to follow, as calculated using the CERf. The dashed green lines represent a possible domestic emissions pathway according to which domestic emissions decline (relative to national BAU emissions) at the same rate that global emissions decline below global BAU emissions. The gap between a country's BAU emissions and its CERf emissions pathway is shaded in light brown; the gap between China's and India's CERf pathway and their dashed green lines is shaded in grey. Red diamonds represent emissions reductions pledges not dependent on action by other countries, and blue dots represent that are so dependent.

Two things are worth noting about these results. First, China's current pledges are actually significantly more and India's slightly more onerous than justice requires (according to the CERf). The United States' and the European Union's pledges, on the other hand, are considerably less ambitious than they ought to be. But--second--since both the US and the EU are obligated to do much more, it follows that they can do what justice requires only by helping other countries to reduce their own emissions, an option that is seldom discussed.<sup>24</sup> Since many developing countries (including India and China) have mitigation potentials that exceed their fair shares,<sup>25</sup> there is much potential for the US and EU to do so.

## ***Conclusion***

We can probably do better in our thinking about how best to distribute the burdens of addressing climate change than the CERf. But in the meantime, the CERf may well be our best option; at the very least, it is considerably better than the principles--Inertia and Equality--on which Peters and his

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colleagues rely. We thus have good reason to conclude, at least provisionally, that while the US and the EU do indeed need to do *much* more than they are currently planning to do, Peters et al are wrong to think the same is true of China. In fact, this analysis gives us reason to think, not only is it not the case that neither China nor India is doing as much as justice demands; in fact, we can now see, both of these countries are currently planning to do *more* than their fair share.

Important to keep in mind when considering these results is that this is an analysis, not of current efforts by these countries, but of the *pledges* they have made to the international community. Some research suggests that things would look considerably worse were the analysis focused on what the countries I have considered are actually doing.<sup>26, 27</sup>

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## Notes

1. See Gardiner, *A Perfect Moral Storm: the Ethical Tragedy of Climate Change*, (Oxford: Oxford University Press, 2011) and Stephen M. Gardiner, Simon Caney, Dale Jamieson, and Henry Shue, eds., *Climate Ethics: Essential Readings* (Oxford: Oxford University Press, 2010).
2. The Pope's encyclical is available here: [https://w2.vatican.va/content/dam/francesco/pdf/encyclicals/documents/papa-francesco\\_20150524\\_enciclica-laudato-si\\_en.pdf](https://w2.vatican.va/content/dam/francesco/pdf/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si_en.pdf), and the *Islamic Declaration* is available here: <http://islamicclimatedeclaration.org/islamic-declaration-on-global-climate-change/>. See also the *Statement of Faith and Spiritual Leaders on the Upcoming United Nations Climate Change Conference, COP21 in Paris in December 2015* (available here: [http://actalliance.org/wp-content/uploads/2015/10/COP21\\_Statement\\_englisch2.pdf](http://actalliance.org/wp-content/uploads/2015/10/COP21_Statement_englisch2.pdf)) and several other recent religious statements (available at <http://fore.yale.edu/climate-change/statements-from-world-religions/>).
3. Peters, et al., "Measuring a fair and ambitious climate agreement using cumulative emissions," *Environmental Research Letters* 10, no. 10 (October 2015) (available [here](#)). For the phrase "fair and ambitious," see §14 of the [Lima Call for Climate Action](#). For another important exception to this trend that is similar in many ways to my own analysis here, see the Civil Society Equity Review of the INDCs, available here: [http://civilsocietyreview.org/wp-content/uploads/2015/11/CSO\\_FullReport.pdf](http://civilsocietyreview.org/wp-content/uploads/2015/11/CSO_FullReport.pdf).
4. Peters et al refer to Equality as "Equity," but this label is both less descriptive and, in this context anyway, tendentious, since part of what's at issue in my discussion is what an equitable distribution would actually look like.
5. Using 2012 emissions data from the *World Resources Institute's* historical emissions tool (available here: <http://cait.wri.org/>).
6. According to article 3, paragraph 4 of the UNFCCC, "The parties have a right to, and should, promote sustainable development."
7. Mengpin Ge, Johannes Friedrich and Thomas Damassa, "6 Graphs Explain the World's Top 10 Emitters," *World Resources Institute*, November 25, 2014, <http://www.wri.org/blog/2014/11/6-graphs-explain-world%E2%80%99s-top-10-emitters>.
8. *CIA World Factbook*, available here: <https://www.cia.gov/library/publications/the-world-factbook/index.html>.
9. There are of course complicated questions about how to balance off the potentially competing demands of Responsibility and Capacity, but this does not affect the present point.
10. Paul Baer, "The Greenhouse Development Rights Framework for Global Burden Sharing," *WIREs Climate Change* 4 (2013), p. 63. As is made clear by Kevin Anderson's recent "Duality in Climate Science," *Nature Geoscience* 8 (October 2015): 898-900, the carbon budget may actually be

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more like 650 GtCO<sub>2</sub>, so if anything, Baer's claim about the amount Inertia would allow each person to emit per year is too generous.

11. I take this to be one lesson of Simon Caney's excellent "Just Emissions," *Philosophy and Public Affairs* 40, no. 4 (2012): 255-300. Cf. Derek Bell, "Carbon Justice? The Case against a Universal Right to Equal Carbon Emissions," in *Seeking Environmental Justice*, ed. Sarah Wilks (Amsterdam: Rodolphi, 2008), pp. 239-57.

12. In my exposition of the CERf, I draw primarily on Paul Baer, Tom Athanasiou, Sivan Kartha, and Eric Kemp-Benedict, "Greenhouse Development Rights: A Framework for Climate Protection That Is 'More Fair' than Equal Per Capita Emissions," in *Climate Ethics: Essential Readings*, pp. 215-230. For other statements of the view, see the Greenhouse Development Rights website, <http://gdrights.org/>.

13. Cf. Baer et al, "Greenhouse Development Rights," p. 224.

14. *Ibid.*, pp. 222-226.

15. *Ibid.*, p. 223.

16. Indeed, this was the one of the framework's developers' primary motivations, as is clear from the opening paragraphs of Baer et al, "Greenhouse Development Rights."

17. For a few others, see BASIC Experts, *Equitable Access to Sustainable Development: Contribution to the Body of Scientific Knowledge*, (Cape Town and Mumbai: Beijing, Brasilia; 2011); H.E. Ott, et al, *South-North Dialogue on Equality in the Greenhouse: A Proposal for an Adequate and Equitable Global Climate Agreement*, (Deutsche Gesellschaft für Technische Zusammenarbeit: Eschborn, 2004); M.M Berk and M.G.J. den Elzen, "Options for Differentiation of Future Commitments in Climate Policy: How Realise Timely Participation to Meet Stringent Goals?" *Climate Policy* 1 (2001): 465-480; and A. Michaelowa, et al, "Graduation and Deepening: An Ambitious Post-2012 Climate Policy Scenario," *Int Environ Agree: Politlaw Econ* 5 (2005): 25-46.

18. See, for example, Caney, "Just Emissions," p. 297, note 94; David Schlosberg, "Capacity and Capabilities: A Response to the Greenhouse Development Rights Framework," *Ethics, Place, and Environment* 12, no. 3 (2009): 287-90; and Kenneth E. Shockley's "A Gentle Critique of the Greenhouse Development Rights Framework" and several other critical articles in *WIRES Clim Change* 4 (2013).

19. The Climate Equity Reference Calculator is available here: <http://calculator.climateequalityreference.org/>.

20. See Pritchett, "Who is Not Poor? Dreaming of a World Truly Free of Poverty," *World Bank Research Observer* 21 (2006): 1-23. I have adjusted Pritchett's figure of \$5,475 in 2000 dollars for inflation using Consumer Price Index data from the Bureau of Labor Statistics.

21. The 88% figure comes from Pritchett, "Who is Not Poor?" p. 10.

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22. Using the calculator developed by the Global Rich List available here:

<http://www.globalrichlist.com/#na>.

23. The charts in Figure 2 were generated using the Climate Equity Reference Calculator. Together with considerably more detail about the results and calculations than I give here, they can be found using the following links: [US](#); [EU](#); [China](#); [India](#). The calculator also makes it possible to change many of the parameters and see how the changes affect the results.

24. However, it is worth noting that a mechanism for this sort of thing may soon be in place. I have in mind the so-called Sustainable Development Mechanism introduced in article 6 of the Paris agreement.

25. See p. 2 of the Civil Society Equity Review of INDCs.

26. I have in mind a recently-published report from the Rhodium Group, the conclusion of which was that the US is not currently on track to meet the goals set forth in its INDC. See John Larsen, Kate Larsen, Whitney Herndon, and Shashank Mohan, “Taking Stock: Progress Toward Meeting US Climate Goals,” January 28, 2016, available here:

<http://rhg.com/reports/progress-toward-meeting-us-climate-goals>.

27. I wish to thank Christian Holz and the audience at the philosophy graduate student colloquium at Johns Hopkins University on February 19, 2016 for valuable comments on earlier drafts of this material.