# Justice in the Greenhouse: Climate Change and the Idea of Fairness

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**Abstract:** The current debate surrounding the implementation of the Kyoto Treaty raises several issues that ought to be of interest to social and political philosophers. Proponents and critics alike have invoked ideas of fairness in justification of their positions. The two distinct conceptions of fairness that are involved in this debate–one of fair shares, and another of fair burdens–helpfully illuminate the proper role of fairness in designing an equitable and effective global climate regime. In this paper, I critically examine the idea of fairness as manifest in two contending visions of the proper international response to mounting evidence that human activity is causing climate change, and that harm from this change is likely to exacerbate existing inequalities. In addition, I recommend one idea of fairness (the fair shares conception) and the political program that it implies.

When the Bush Administration formally withdrew the United States from the Kyoto protocol—the global climate change treaty negotiated in 1997 that binds industrialized nations to greenhouse gas emissions reductions—it cited among its reasons for doing so the unfairness of the treaty framework.[1] On this point the Administration is undoubtedly correct: any viable global climate change mitigation program must be fair to all parties if it is to succeed. Given the absence of a strong and centralized international regulatory regime to monitor and enforce the terms of the protocol, the manner in which the agreement allocates burdens and responsibilities for greenhouse gas abatement must be seen as fair in order to be accepted, implemented, and enforced by the parties to it.

Beyond this practical concern for fairness, a more fundamental philosophical point might also be made. The costs of anthropogenic climate change, although not fully understood, are certain to be distributed in an inequitable manner that cannot but be called unfair. According to the Intergovernmental Panel on Climate Change (IPCC), the international group of climate experts established in 1988 by the United Nations Environmental Programme, "the impacts of climate change will fall disproportionately upon developing countries and poor persons within

all countries, and thereby exacerbate inequities in health status and access to adequate food, clean water, and other resources."[2] For the most part, the nations and peoples that will bear the brunt of the ecological (and consequently social, political and economic) damage of climate change are among the least responsible for the greenhouse pollution causing those problems. Those principally responsible—the industrialized nations of the North[3]—are the regions likely to suffer the least from climate change.

This inequity suggests two preliminary conclusions, upon which this paper is based: that inaction to mitigate anthropogenic climate change is not a viable alternative, based on considerations of fairness and the mounting evidence that human activity is creating ecological hazards, and that the political response to anthropogenic climate change must not only reduce greenhouse gas emissions but must also correct for the inequitable and unfair cause and effect noted above. A fair climate regime, that is, requires not only an equitable allocation of mitigation burdens, but also a system of remedial compensation that accounts for the disparity between contributions to and adverse effects resulting from climate change.

## I. Implementation

The 1992 Framework Convention on Climate Change declares anthropogenic climate change to be a "common concern of mankind" and notes that "the largest share of historical and current global emissions of greenhouse gases has originated in developed countries" despite the disproportionate damage impact on developing ones. Signatories to the treaty pledged to freeze emissions at 1990 levels (pending further study) and, through future action, to "protect the climate system for the benefit of present and future generations of mankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capacities." Since the developed countries were primarily responsible for the problem and uniquely capable of its mitigation, concerns for "equity" required that "the developed countries take the lead in combating climate change and the adverse effects thereof."[4]

How successful have subsequent international climate mitigation efforts been at realizing this conception of equity? Three years after the 1992 Rio summit, further evidence about anthropogenic climate change and skepticism about the efficacy of non-binding targets led delegates to affirm the Berlin Mandate, again calling for "common but differentiated responsibilities" but this time through binding emissions targets for industrialized countries. At the Kyoto meeting in 1997, the industrialized nations (Annex I) were bound to a combined 5 percent reduction in greenhouse emissions from 1990 baseline levels, to be achieved by the compliance period of 2008–2012. These mandatory reductions were assigned on the basis of the "differentiated capacities and capabilities" model, ranging from a prescribed 8

percent reduction for the EU (which has a "bubble" cap for all member countries) to a 10 percent increase for Iceland. The United States, despite its status as the biggest aggregate, per capita, and historical greenhouse polluter, was assigned a 7 percent reduction.

One decade after the Framework Convention, the Kyoto protocol is on the verge of being implemented without the participation of the United States.[5] In the interim, the EU has decreased its emissions from the 1990 baseline, due largely to an aggressive modernization of the former East Germany following reunification, but also due to proactive emissions abatement investments by other member nations. Russia's emissions declined by 29 percent, and Ukraine's by 49 percent, owing to the 1990s economic collapse and consequent decline in both industrial production and consumption. China—the second largest aggregate greenhouse polluter, whose exclusion from the Kyoto protocol is frequently cited by the Administration to justify the U.S. withdrawal—froze its emissions near 1990 levels despite the lack of binding standards, owing largely to an aggressive campaign following Kyoto in which it reduced its emissions by 17 percent between 1997 and 2000 (a period in which it also saw economic growth of 36 percent).[6] Meanwhile, U.S. emissions have increased by 13 percent from the 1990 baseline, and the Administration's proposed Kyoto "alternative" is expected to have little effect on curbing this growth rate.[7]

## II. Fairness

What would constitute an equitable or fair climate change regime? Since anthropogenic climate change is widely regarded as underway, and since existing and near-future greenhouse gas emissions will continue to adversely affect persons for over a century, fairness must be concerned with both mitigation and compensation. That is, the regime must assign some set of abatement *burdens* as the centerpiece to a mitigation program, and these burdens must be assigned fairly. In addition, the inequity between contribution and harm, in which the developing South assumes the bulk of the damage costs, caused principally by the industrialized North, requires an additional compensation from North to South in a fund to be used for sustainable development as well as adaptation to a changing climate.

What is the proper mix between mitigation and compensation? Economists conceive of the level of "optimal pollution" as that point where marginal abatement burdens equal marginal damage costs. Regulations mandating zero pollution would be inefficient because prohibitively expensive, and so (arguably) should aim instead for that point where one extra dollar invested in abatement technology would result in less than one dollar in avoided costs. According to the IPCC, the optimal level of atmospheric $CO^2$ concentration is somewhere between 400 and 450 ppmv—a level considerably lower than would result from compliance with the Kyoto protocol

but high enough to produce significant adverse effects, particularly upon countries of the South. At this "optimum" level, damage costs would be roughly equal to mitigation costs, with both estimated at approximately 1 percent of gross world product. These damage costs would be inequitably distributed, however, with the North bearing costs ranging from 0.7 to 1.2 percent of GNP, with a range of 1.8 to 8 percent of GNP borne by the nations of the South.[8]

Two conceptual approaches to international fairness within a global climate regime would appear to offer two distinct sets of policy recommendations. On one hand, the task of assigning national emissions caps might be regarded as the allocation of *fair burdens*, where each participating nation is expected to shoulder a roughly equal mitigation cost. If, as the Framework Convention maintains, climate change is a global problem that demands global solutions, then the allocation of climate change reduction burdens might begin with a presumption of equality (that is, where the allocation of abatement costs is based upon an assumption of equal causal responsibility, implying equal liability), and deviate from equal burdens (measured in terms of percentage reductions from a baseline or mitigation costs as a function of GNP) only slightly, and then based upon a mix of causal responsibility, mitigation capacity, and political will. This conceptual approach (embodied within the Kyoto protocol) has the advantage of political expedience, since it avoids assigning blame or differentially weighting burdens according to other contentious criteria.

On the other hand, the task might be conceived as one of determining *fair shares* (or a mitigation regime that assigns differential abatement costs among participants based upon morally relevant differences among them, and where equal causal responsibility and liability is not assumed). Here the focus shifts from allocating the costs of achieving a given reduction from a status quo baseline to the allocation among nations of permitted emissions levels, which would be based not on an historical baseline but according to some relevant criterion such as population size. Prescribed emissions caps might vary widely in order to achieve the same global 5 percent reduction as prescribed by the Kyoto protocol (or the steeper cuts needed to stabilize atmospheric $CO^2$ at 450 ppmv), with the heaviest burdens falling upon the biggest current *per capita* greenhouse polluters. Past emissions would not, as they do under a *fair burdens* scheme, confer a claim to larger or smaller future caps, being relevant to each nation's compliance costs but not their fair share of global emissions. Such an approach may not be politically viable, given the rejection by the United States of the far more modest framework of the Kyoto protocol, but fairness is not always attractive to all participants in a cooperative scheme, and is likely to be most unattractive to those who benefit most by existing arrangements. What, if anything, might recommend one of these conceptions over the other?

## III. Responsibility

Evaluation of the respective merits of the *fair burdens* and *fair shares* conceptions might helpfully be illuminated by several familiar ethical principles. From the premise of fundamental equality, Brian Barry derives a principle of *responsibility* which holds that "a legitimate origin of different outcomes for different people is that they have made different voluntary choices."[9] That is, fairness (or justice in distribution) requires that like cases be treated alike, and bases legitimate unequal treatment upon morally relevant differences (i.e., those for which they can be held responsible) among persons. A corollary to this principle, as Barry notes, is "that bad outcomes for which somebody is not responsible provide a prima facie case for compensation."[10] Since agents cannot be causally responsible for luck, they are not to be held morally responsible for its products; benefits and burdens resulting from luck are to be borne by society as a whole rather than by any individual.

Applied to the climate debate, this principle holds that the ecological harm resulting from anthropogenic climate change should affect only those agents (whether nations or persons) that contribute excessive greenhouse gases into the earth's atmosphere. When combined with the principle of *equity*, the principle of responsibility binds those who are causally responsible for the harms of climate change to bear its costs in proportion to their contributions. Sometimes referred to as the *polluter pays* principle, the combination of responsibility and equity model is an oft-recognized component of the idea of *fairness*: those who make a mess ought to pay for its cleanup; those who make more of a mess ought to pay more for its cleanup; and those not responsible for the mess should not be harmed by it.

Absent a deliberate effort, through binding targets and effective enforcement, the above principles will continue to be violated by the large polluters of the North, who contribute the bulk of the greenhouse gases that cause climate change, but who stand to be adversely affected much less than smaller contributors (and non-contributors) to the problem. The status quo, in other words, fails the standard of fairness outlined above in that the primary culprits stand to bear far less than their fair share of the damage costs, given their disproportionately large contribution to the problem, and those expected to bear the bulk of the damage of climate change will have contributed little or nothing to the problem. For equity and responsibility to be realized, some combination of mitigation and compensation would be required to correct for this imbalance, perhaps approximating the optimal level of greenhouse pollution.

One might postulate that individual nations should be willing to assess their own levels of risk acceptance and time preference, and so decide among themselves how much present consumption to forego in order to avoid possible future calamity, but the transboundary nature of climate change makes such variation in the balance

between mitigation and damage costs impossible. The atmosphere is a common pool resource that is indifferent to political boundaries or point-source emissions—a ton of carbon equivalent emissions from anywhere is the same as a ton emitted from anywhere else. Contributors can't be isolated from the buildup of atmospheric $CO^2$, and contributors cannot choose to quarantine their own emissions.

Ecological costs are distributed without reference to individual contributions or tolerance for risk. One nation's acceptance of greater future damage costs for the sake of avoiding greater current mitigation costs generates a free rider problem that threatens to undermine the entire cooperative system. For this reason, and to prevent emissions "leaks" (where polluting industries move from an emissions-controlled area to an uncontrolled one), all must participate and agree to a common balance between these two kinds of costs. As the Framework Convention reads, states have the "sovereign right to exploit their own resources pursuant to their own environmental and developmental policies," but also "the responsibility to ensure that activities within their jurisdiction or control do not cause damage to other States or of areas beyond the limits of their jurisdiction." This latter responsibility serves as the limiting case for the former right, since no nation has the moral right to harm another with impunity. To do so contravenes the principle of responsibility, and the idea of fairness upon which it depends.

## IV. Complications

The *fair burdens* approach, in which participant nations are required to shoulder roughly equal burdens in the mitigation of greenhouse emissions, and as embodied with the Kyoto protocol, may well be, as the Bush Administration claims, "fatally flawed."[11] While most view it as largely symbolic, and the beginning of a long-term global mitigation strategy rather than the entirety of one, the manner in which mitigation costs are allocated among nations under the protocol suggest significant philosophical as well as political objections. The political objections—at least those issuing from Washington—recommend further inaction and obstruction, while the philosophical objections recommend a *fair shares* approach, based upon the insurmountable problems with the *fair burdens* strategy of the Kyoto protocol.

Both classes of objections, however, agree in principle upon the need to somehow include the entire world under a regulatory system. The two-tiered system, in which only Annex I countries initially have binding emissions caps, while developing countries are brought under a global cap at some unspecified future point, is a product of both principle (that of "common but differentiated responsibilities and capacities") but also pragmatic politics, which required the participation of the South as well as the North.

The reasons for this two-tiered system were compelling enough: the Annex I countries have disproportionately contributed to the problem and (partly as a result)

have adequate resources for mitigating it. Combined, they emitted an average of 3.2 metric tons of carbon per capita in 1990 (among them, the U.S. was highest at 6.0 metric tons), while non-Annex I nations averaged 0.4 metric tons.[12] By contrast, gross domestic product (GDP) in the industrialized nations of the OECD averaged $22,020 per capita in 1999, compared with $3530 in developing nations.[13] Indeed, the commitment to "common but differentiated responsibilities" from the Kyoto treaty expressly intended to link mitigation responsibilities to past contributions and ability to pay, even if the negotiated targets under the protocol failed to more closely approximate those differences. If fairness is a function of causal responsibility and capacity, then the North ought to shoulder almost the entire mitigation burden, at least in the initial phase. For this reason, the IPCC framework expressly aimed not to "aggravate existing disparities" in mitigation efforts.

Despite its initial appeal, the two-tiered system contains several important flaws. Politically, it galvanized opposition to the protocol within the U.S. (and elsewhere), where the AFL-CIO and other labor organizations joined fossil fuel interests in opposing the treaty on grounds that it might lead to the export of emissions-intensive manufacturing jobs.[14] In addition, a practical problem involves the disparity in emissions growth rates in industrialized versus developing nations. While emissions in the industrialized nations have grown on an average of 1.2 percent per year, they are increasing at 2–3 times that rate in non-Annex I nations. At projected rates of increase, aggregate emissions from developing nations will soon surpass those of the Annex I countries. Developing nations will eventually need to be brought under a global cap, and mandatory controls on emission increases in the near term will make compliance with that cap more tenable in the longer term. Fairness requires that emissions caps in developing nations with relatively miniscule per capita emissions not be burdensome (as they bear relatively little responsibility for the problem), but that they exist in order to check unsustainable growth.

This is not to suggest that India and China ought to be assigned mandatory emissions reductions before the U.S. should agree to participate, as the Administration has contended. Despite being home to 40 percent of the planet's population, these two nations have together contributed only 9 percent of the planet's total accumulated anthropogenic greenhouse gases, compared with 30.3 percent by the U.S., with its 5 percent of world population. Moreover, as noted above, China has been much more aggressive and successful in greenhouse gas abatement in the past decade than has the United States. In China, where there are eight motor vehicles for every 1000 people, and in India where there are seven, mandatory emissions reductions comparable to those assigned to the U.S. (where there are 767 increasingly-inefficient cars for every 1000 people) would constitute a colossally unfair burden. This is not to suggest, however, that no mandatory cap limiting emissions in non-Annex I countries is warranted. On the contrary, the cap should model the requirements of fairness.

## V. Hot Air

At the Kyoto climate meetings, a major political quagmire concerned the problem of what to do with the Annex B countries of the former Soviet Union. Collectively, their emissions since the 1990 baseline year had plummeted nearly 40 percent, and for reasons that had little to do with concern for the global environment. Given the existence of an emissions trading market under the Kyoto protocol, Russia and Ukraine would stand to gain significantly by selling their excess emissions shares (called "hot air" by critics). Should Russia and Ukraine *benefit* by emissions reductions that were unintentionally generated? One might be tempted toward this conclusion based on the principle of responsibility: insofar as their emissions reductions came about as a result of luck,[15] might they be exempted from the kind of credit given to, for example, the EU (which achieved its gains from a more deliberate and purposive effort)? After all, there seems to be a worthy distinction between proactive pollution prevention and accidental gains. Their emissions baseline could be adjusted in order to reflect the unintentional nature of these reductions. But would this be fair?

The Annex B economic collapse cannot be regarded as a matter of brute luck, such that resulting emissions reductions are discounted. A second distinction must be made between unplanned acts and their consequences, and those that result from luck alone. Economic collapse, and the resultant decrease in emissions, is presumably unplanned (it is not a product of voluntary choices), but its beneficial ecological effects ought not to be written off as beyond the responsibility of those who bore the costs of (involuntary) emissions reductions. If causal responsibility is to be a central criterion for allocating mitigation burdens, then an outcome-oriented standard (rather than some standard of intent) ought to be employed in assessing compliance, as well.

The point of employing a baseline and assigning reduction targets rather than specifying more precisely how reductions are to be achieved is that the former allows nations flexibility in complying with the terms of the treaty. Some may seek greater energy efficiency, others may concentrate on mass transit or renewable energy, while still others may attempt to reduce production or consumption. While it is unlikely that many would intentionally pursue the paths of Russia and Ukraine, this should not disqualify that manner of achieving reduction targets.

That these two nations achieved emission reductions as the unintended consequence of political-economic events is beside the point. A second example better illustrates this argument. Russia and Ukraine reduced their emissions by reducing their industrial output and consumption. Their motive was almost certainly not a reduction in greenhouse gas emissions, but should this lack of motive be counted against them? Must we demand that only those emission reductions achieved through a conscious and deliberate effort at such abatement count toward the Kyoto targets? What if the motives for such reductions are mixed, as between mitigating

climate change and other benefits? Many of the same actions that reduce greenhouse gas emissions also conserve energy, reduce air pollution, relieve road congestion, and save money for consumers. We might expect that the ancillary benefits of greenhouse gas reduction, rather than concerns about the global climate, are the most pressing motives for persons and states. Should their beneficial consequences for climate change be thereby disqualified?

An element of hypocrisy accompanies the suggestion that Russia and Ukraine not be allowed to trade their "hot air" credits to nations like the U.S., Canada, and Australia (all of which lodged objections to awarding Annex B countries "hot air" credits). Since 1997, delegates from these nations have insisted upon the crediting of their large forested areas as "carbon sinks" toward emission reduction targets. The more densely-populated nations in Europe and Asia (which lack the huge sinks) unsuccessfully objected to this proposal, since they would serve as a *de facto* reduction in burdens for those nations, diminishing as well the global carbon reduction given existing targets. The hypocrisy, though, comes through the assertion that emission reductions resulting from the prolonged recessions in Russia and Ukraine ought not to count toward reduction targets, as a matter of luck, but that the abundant natural resources in North America and Australia ought to count toward those goals, as (somehow) the product of deliberate human planning and voluntary effort. In effect, this combination of arguments seeks to further punish the unfortunate for their misfortune, and to reward the fortunate for their good luck.

Complaints lodged by Kyoto opponents about the emission reductions counted under the EU's compliance record resulting from the cleanup of former DDR factories and power plants illustrate another problem with the fair burdens approach. These emissions reductions cannot be considered to be the product of luck, since Germany spent billions of dollars modernizing older industrial infrastructure in order to achieve the reductions that largely account for Europe's movement toward compliance. Yet, there remains a troubling problem with the emissions credit that resulted from the one-time event of German reunification. The use of the 1990 baseline results in a benefit for the EU resulting from the existence of high-emissions East German factories and power plants in that year—a state of affairs that resembles luck—and which may partially undermine claims of responsibility for its cleanup. Likewise, Russia and Ukraine gained by virtue of the fact that their emissions were at an historical peak in 1990. Those nations that were the largest polluters at the time the baseline was established thereby received a kind of reward for this. Meanwhile, other nations, which accounted for much less pollution at the time the baseline was established, are limited in their future emissions for similar reasons.

Starting points for the various participants thus become highly relevant under any scheme that prescribes reductions from an historical baseline. The fair burdens approach of the Kyoto protocol, with its "common but differentiated

responsibilities," fails to compensate for the unfairness of these widely disparate starting points. Those who polluted more in 1990 get to pollute more into the indefinite future, and vice versa. The United States, with per capita emissions more than twice as high as the EU or Japan, five times as high as China, and ten times those of India, would under the protocol be grandfathered into a substantially higher emissions allowance than its economic competitors. These disparities in 1990, which would be difficult if not impossible to justify by any standard of international fairness, would be legitimated by the protocol, establishing *de facto* pollution rights that are distributed in a highly inequitable manner and locked in over time. In following a fair burdens approach, such a climate regime would violate the polluter pays principle contained within the idea of fairness—not only would historical pollution be entirely disregarded, but it would serve as the basis for inequitable future pollution rights.

Had non-Annex I countries been included in the initial round of mandatory caps, they would have been locked in near their 1990 emissions levels, freezing the world economic hierarchy by denying developing countries the ability to industrialize (by limiting the concomitant greenhouse emission increases). As soon as they are brought under the regulatory framework of the treaty, their growth potential may be frozen in a way that the earlier-developing nations of the North were not. The problem is not that binding emissions limits are inherently unfair, but is instead with the widely disparate caps that allow more pollution from historically bigger polluters (thereby undermining the principle of responsibility, which requires that all bear a share of the abatement burden in proportion to their contribution to the problem). The problem, in other words, is not with the design of the fair burdens approach, but is with the approach itself.

## VI. Population and Responsibility

The above analysis of fairness and responsibility implies the need for a fair shares approach, where emissions caps are a function of population size, rather than historical pollution rates. A version of this approach has been promoted under the rubric of "contraction and convergence,"[16] where developing country per capita emissions are gradually contracted, and where world emissions slightly increase to converge upon a level where atmospheric $CO^2$ concentrations stabilize at 450 ppmv by the year 2100. The problem of determining the appropriate culpability for past and present pollution is subsumed within the logically prior question of how much one person might be allowed to individually emit without jeopardizing the well-being of others. Moreover, the equal per capita emissions scheme avoids the philosophically perilous claim that persons born into wealthier nations deserve their status as larger polluters, opting instead to treat all persons equally regardless of their draw in the natural lottery of birth.

Under this approach, the biggest current polluters bear proportionally bigger mitigation burdens, and those currently not emitting significant greenhouse gases but threatened by the predicted hazards of climate change benefit from emission trading arrangements with Annex I countries that exceed their mandatory caps. The global redistribution of wealth that this trading scheme would initially produce would serve not only as compensation for the harm inflicted upon developing countries by their wealthier counterparts, but could also be employed for the sustainable development of non-Annex I economies without jeopardizing the larger global effort through emissions leakage. It could deploy emissions abatement technology where marginal abatement costs are lowest, promoting the most efficient emissions reductions, and would appropriately reward recent abatement efforts and punish abdication of abatement responsibility.

A population standard, however, raises problems of its own. Since population growth is a leading causal variable in national emissions rates, how is population growth to affect the reapportionment of future emissions shares? Should rapidly-growing nations enjoy similar growth in their shares of aggregate emissions? Should those nations approaching zero population growth, likewise, see a shrinking share of allowable emissions as their share of the planet's population declines? If so, another set of perverse incentives is created, since encouraging population growth is certain to undermine whatever other emissions abatement gains are made. In addition, the principle of responsibility suggests that nations—which can do a better or worse job in controlling their own populations—be held responsible for this project. Ignoring the problem of overpopulation—or, worse, encouraging it—is something that any policy aiming to avert the hazards of climate change must strongly discourage.

If emissions shares are not periodically reapportioned, then the baseline population that serves to determine emissions shares appears arbitrary. While 1990 is defensible as a greenhouse gas emissions baseline under the Kyoto protocol (it was the year in which the IPCC released its First Assessment Report confirming the link between human activity and climate change), the ecological threats posed by population growth have been well known for at least a century. Ought we to apportion emissions limits based on 1898 census figures, in order to mark the publication of Malthus' famous work? Or 1972 figures, when the Club of Rome brought the Forester "limits to growth" thesis to the world's attention?

This is a problem with no easy answer. Part of what made the 1990 Kyoto baseline so palatable was that the participating nations, meeting in Rio in 1992, had pledged to stabilize emissions at 1990 levels by 2000. Emissions at the time of that initial agreement had not changed appreciably in the two years since the baseline. Insofar as they had, participating nations were all aware in 1990 that caps were coming, and could defensibly be held responsible for exacerbating their later burdens by allowing significant emissions growth during those intervening years. In the case of population, any historical baseline year (including the present) appears

arbitrary. When considering national population policies prior to the baseline year, the most destructive activities (those that allow high rates of population growth) are rewarded with higher emissions shares (although not higher *per capita* shares), and the most sustainable ones punished. One cannot, however, alter past birth rates by manipulating incentive structures. To paraphrase Socrates from *The Republic*, one must do the same thing whether dropped into a small pool or the middle of the ocean—start swimming. The people who are here are already here. Any effective climate policy must take account of population growth, but can do so only from the present forward. This, in the absence of any better argument, serves as the justification for taking current population levels and freezing emission shares by those proportions.

## VII. Conclusion

While this proposal is unlikely to be welcomed by the industrialized world, fairness and popularity are often distinct qualities. The fair shares conception, as embodied within a per capita emissions share climate change mitigation regime, best realizes the idea of fairness and offers a compelling vision of international justice, as well. Rather than tying foreign aid to military strategy, resource exploitation or commodity production or consumption, the North would aid the South for having to bear the costs of the externalities of northern industrialization. For decades the global atmosphere has been treated as a public sewer in which to dump the costs of enriching the affluent, and it is only fair that we now begin to pay for this unconscionable behavior. That it provides the proper incentive structure for taking human-caused climate change seriously, and begins to rectify the gross global inequity of wealth, renders this proposal worthy of some consideration, should the appropriate role of fairness in ongoing climate change mitigation efforts ever become the subject of serious public debate.

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## Notes

1. The Administration has repeatedly charged that the protocol unfairly punishes the US and other industrialized nations in that it exempts developing nations like China and India from current emissions caps.

2. Intergovernmental Panel on Climate Change, *Climate Change 2001: A Synthesis Report* (New York: Cambridge University Press, 2001), 12.

3. To refer to the industrialized nations as the "North" is not entirely accurate, since they include Australia but not Pakistan, but this is nonetheless the standard parlance for contrasting industrialized and developing nations that avoids more objectionable terms.

4. United Nations, *United Nations Framework Convention on Climate Change* (1992).

5. According to the terms of the protocol, it goes into effect when signed by 55 nations that together comprise 55 percent of 1990 developed nation emissions. Thus far, 87 countries have ratified the protocol, and will reach the 55 percent emissions threshold when Russia signs, as it is expected to do later this year.

6. Natural Resources Defense Council, "Second Analysis Confirms Greenhouse Gas Reductions in China," online report, 2001 (www.nrdc.org/globalwarming/achinagg.asp).

7. The Administration proposed freezing "emissions intensity" (greenhouse gas emissions as a percentage of gross national product), which allows virtually unlimited emissions growth in a growing economy, and which is indistinguishable from the "business as usual" emissions scenario with no limits.

8. IPCC (2001), 108–122.

9. Brian Barry, "Sustainability and Intergenerational Justice," in *Fairness and Futurity*, ed. Andrew Dobson (New York: Oxford University Press, 1999), 97.

10. Ibid.

11. Borrowing the phrase from anti-Kyoto literature produced by ExxonMobil.

12. Energy Information Administration, *International Energy Outlook 1998* (US Department of Energy, 1998).

13. United Nations Development Programme, *Human Development Report 2001* (New York: Oxford University Press, 2001), 144.

14. In its Third Assessment Report, the IPCC estimated leakage to range from 5–20 percent, meaning that if Annex I nations achieved the mandatory 5 percent emissions decrease from the 1990 baseline, it would be offset by leakage of between 0.25 and 1 percent increases in non-Annex I countries.

15. Their luck was both good and bad—good for the benefits that it might bring under a trading scheme, but bad in most other respects. It might nonetheless be called luck because of the disparity between actual and intended outcomes.

16. Aubrey Meyer, *Contraction and Convergence: The Global Solution to Climate Change* (Green Books UK, 2001).