

Climate Change Justice

Edward Page

Introduction

It is now known beyond all reasonable doubt that the human consequences of climate change will be substantial, on balance adverse, and will rise markedly with higher levels of global warming and sea-level rises (Parry *et al.* 2007: 65–68; Stern 2007: 65–103). Those bearing the greatest disadvantages will be populations residing in the developing world (due to geographical vulnerability, limited adaptive capacity, and the reliance of developing state economies on ecosystem services) and vulnerable social groups located in all regions (due to the way the impacts of climate change compound existing social and economic inequalities) (Parry *et al.* 2007: 69; Adger 2010: 282–283). Within this context of vulnerability and risk, policy-makers and normative theorists have become increasingly preoccupied with the concept of “climate change justice,” which, for the purposes of the chapter, is defined as the equitable distribution of benefits and burdens arising from global climate change and policies for its management.

Three key challenges arise for any plausible theory of climate change justice. First, to determine the share of the capacity of the Earth’s atmosphere to assimilate carbon dioxide (CO₂) and other greenhouse gases that morally relevant agents should be able to exploit as a matter of distributive justice. According to the standard way of approaching this “justice in emissions” problem, the task is to find the correct principle(s) of justice that should regulate the total amount of greenhouse gas that states and agents operating within their territories should be permitted to emit each year over the next century (Shue 1993: 48–50; Caney 2009: 125–126). The international legal background of this task is the “ultimate objective” of the United Nations Framework Convention on Climate Change (UNFCCC) of 1992 to achieve “stabilization of greenhouse gas concentrations in the atmosphere at a level that would

prevent dangerous anthropogenic interference with the climate system” (UNFCCC 1992: Article 2). Second, the burdens associated with managing climate change and its adverse effects should be equitably allocated amongst the relevant agents. The idea here is that an account of justice in emissions would be theoretically incomplete, as well as practically useless, without an accompanying account of “justice in burdens” that specifies the way in which agential and institutional burdens associated with effective policies of climate mitigation and adaptation should be distributed within and between generations (Page 2008; Caney 2010: 751–752). Third, the duties and entitlements of climate change justice, if they are to be of genuine relevance for policy-makers, must be incorporated into the process whereby national, regional, and global climate policies are selected. A further aspect of this “justice in governance” problem is that, in absence of the integration of normative theory and climate policy-making, attempts to manage climate change through international cooperation have the potential to undermine established norms of global poverty reduction and political legitimacy.

In this chapter, my aim is to give a sense of the progress that normative theorists have made in developing, and applying practically, the concept of climate change justice through an examination of all three problems. For the purposes of simplicity, I assume throughout that the primary agents to whom enforceable duties and entitlements of climate justice can be allocated are *states* rather than the individual citizens or corporations operating within, and between, their territories. One reason for this “statist” starting point is that, given the intergenerational and international character of the climate problem, individual citizens lack the properties required to undertake or supervise successful mitigation and adaptation measures. States, by contrast, are the political units at the heart of existing domestic and international environmental law on climate change; states possess many of the political and economic resources necessary to manage climate change that sub-state actors lack; and, as signatories and ratifiers of treaties and conventions, states actively claim legitimacy in areas of policy required to respond to climate change.

Distributing Greenhouse Gas Emissions Justly

Avoiding “dangerous anthropogenic interference” in the climate system over the next century will require a coordinated international response in terms of reducing global flows, and later stocks, of atmospheric greenhouse. The challenge here is for the international community to impose distributive order on the hitherto unregulated use of the atmosphere in a way that cannot be reasonably viewed as unjust by any state (Gardiner 2010: 52). This “justice in emissions” problem has two key dimensions (Caney 2009: 125). The first is the task of establishing and enforcing a global emissions budget over the coming decades consistent with the early peaking of (and subsequent significant rate of reduction in) greenhouse gas emissions that will predictably deliver a high probability of avoiding dangerous anthropogenic interference. The second task is to allocate a set of greenhouse gas emissions entitlements amongst states over this period that can be viewed by all as equitable.

While there exists no academic or policy-maker consensus as to how the goal of dangerous anthropogenic interference in the climate system should be specified to be of genuine policy relevance, an increasing number of analysts and environmental

organizations, and the governments of over 190 states, have now endorsed a solution to the emissions trajectory problem that has the objective of limiting global warming to no more than 2 °C over its pre-industrial value (see European Commission 2011: 3; Garnaut 2011: 36–38; UNFCCC 2011: 3). Since the 2 °C objective is merely one of several possible methods of concretizing the goal of dangerous anthropogenic interference, it can usefully be reframed as the objective of “avoiding dangerous climate change.” Recent research indicates that achieving a 29–70% chance of avoiding dangerous climate change by meeting the 2 °C objective would require policies being adopted that result in no more than 2000 billion tonnes of carbon dioxide (CO₂)-equivalent being emitted in the 2000–2050 period, of which roughly 400 billion tonnes have already been emitted (Meinshausen *et al.* 2009: 1161). The problem of allocation, assuming this analysis is both correct and endorsed by the international community as the basis of post-Kyoto climate politics, amounts to specifying how the remaining 1600 billion tonnes of CO₂-equivalent should be shared amongst the world’s 200 states between 2012 and 2050.

Four substantive allocation principles currently dominate the literature on the just allocation of emissions entitlements (see Vanderheiden 2008a: 221–257; Caney 2009: 127–137; Gardiner 2010: 56–60).

(1) *Emissions grandfathering.* According to “emissions grandfathering,” each qualifying state should reduce its emissions by a uniform (or close to uniform) amount in percentage terms relative to some pre-specified base year such as 1990 or 2005. This approach remains the primary method of allocating mitigation responsibilities amongst the developed states listed in Annex B of the Kyoto Protocol to the UNFCCC, which imposed a legally binding average cut in six greenhouse gases of 5% relative to 1990 levels (UNFCCC 1997: Annex B). The normative idea behind emissions grandfathering is essentially that the mitigation commitments required of each state as part of its duty to participate in the collective climate mitigation effort should reflect the fact that national emissions prior to the negotiation of global climate agreements were essentially unregulated and should therefore be treated as defining the baseline for the mitigation effort that can reasonably be requested of each state.

Notwithstanding its success in becoming a major pillar of international environmental law and the domestic environmental policies of many developed states, the obvious problem with emissions grandfathering as an expression of climate change justice is that it assigns an implausible weight to the normative relevance of historic usage of the capacity of the atmosphere to assimilate greenhouse gas. As such, the approach has no real response to the objection that anchoring the emissions entitlements of states to their past emissions profiles would be unfair to states responsible for modest accumulations of atmospheric greenhouse gas since 1750 (Vanderheiden 2008a: 226; Gardiner 2011: 425). Emissions grandfathering could easily result, for example, in the per capita emissions of the developed world continuing to exceed those of the developing world for many decades even if the latter were exempt from the relevant emissions reductions.

(2) *Equal mitigation sacrifices.* According to this approach to justice in emissions, states that pass a simple prosperity test should undertake mitigation activities that impose on each a roughly similar cost in terms of forgone national income or well-being over the 2000–2050 period (Traxler 2002; Miller 2009: 146–151). If the

global climate response requires a level of mitigation activity to avoid dangerous climate change that would impose a 2% loss in the combined incomes of middle- and high-income states, relative to what they would have been in the 2000–2050 period in the absence of the necessity for a coordinated international climate response, the equal sacrifice approach requires that this burden be borne so that the average citizen in each state faces a similar loss in future income expectations (Miller 2009: 147). In this sense, seeking to equalize the burden that each state faces in reducing its greenhouse emissions as part of the fight against dangerous climate change does not seek to establish an idealized pattern of international greenhouse emissions, or the rights authorizing these emissions, over the 2012–2050 period. There is, that is, no individual or collective “right” to emit a certain amount of the greenhouse gas that might be emitted over the next century without triggering dangerous climate change. Rather, the actual pattern of greenhouse emissions over this period is permitted to vary so long as loss borne by the average citizen of each state caused by changes in lifestyle and consumption is equalized.

One fairly obvious normative problem with the equal sacrifice approach is that it seems unjust, given significant disparities in living standards amongst high- and middle-income states, to require that the poorer states in this group (however wealthy they might be compared to low-income states) bear identical economic burdens in percentage terms to their richer counterparts merely because an effective solution to climate change requires a widespread mitigation effort. On Miller’s (2009) derivation of the approach, for example, all high-income members of the Organisation for Economic Co-operation and Development (OECD) would be required to forgo the same proportional gains in national income per capita despite the greater than 4 : 1 ratio between their current national incomes. Some versions of the equal sacrifice approach seek to finesse this problem by abandoning national *income* as the metric of sacrifice in favor of national *welfare* in order to capture the non-monetary role that many greenhouse gas emitting activities play in the lives of the average citizen of all states (Traxler 2002). While this change of metric introduces a certain degree of sensitivity to variations in lifestyle, geographical location, and income amongst those states attributed duties of mitigation, the problem remains that equalizing mitigation burdens amongst states whose citizens experience very different average qualities of life means the approach seems both unfair and unlikely to motivate compliance amongst many qualifying states.

(3) *Emissions egalitarianism*. Critics of emissions grandfathering may be attracted to the view that, in the absence of a good reason to the contrary, a principle of equality should dictate the spatial and temporal distribution of emissions rights. That is to say, emissions rights should be allocated amongst states so that each will enjoy a similar level of access to the capacity of the atmosphere to assimilate greenhouse gases without triggering “dangerous anthropogenic interference.” Due to the obvious problems posed by variations in state population size for egalitarian approaches, emissions rights egalitarians almost invariably adopt the view that it is the *per capita emissions*, rather than the *absolute emissions*, of states that should be equalized over some pre-specified historical period (Meyer 2000: 56; Baer and Athanasiou 2002: 76–97). The idea here is that global climate change justice will be achieved only if developed and developing states converge on a roughly equal level of

annual greenhouse gas emissions per person. Garnaut (2011: 42–45), for example, suggests that this would optimally involve the average citizen of all states converging in the middle of the century at the greenhouse emissions level of the current average Indian citizen: roughly 2 tonnes of CO₂-equivalent per annum.

Aside from the negative justification of “emissions rights equality” noted above, there are a number of positive arguments that have been adduced in the literature for the equalization of the per capita greenhouse gas emissions of each state. It might be held, for example, that the assimilative capacity of the atmosphere is the common property of mankind and therefore its value must be distributed equally within and between generations, like any other commons. Here, the *common ownership* rights of access of citizens belonging to all states render redundant territorial and historical claims of appropriation and transfer (Singer 2002: 35). Another possibility, however, is that apportioning emissions rights equally amongst states might be the only way to express equal concern and respect for the *vital interests* of citizens of all states who share the capacity of the atmosphere to assimilate greenhouse gases.

Though a popular view among policy analysts, emissions egalitarianism faces a fierce combination of normative objections leveled at both its egalitarian ethos and per capita operationalization. Thus, it has been argued that equalizing the per capita level of each state’s greenhouse emissions would reduce neither global inequality nor the number of humans who fail to have their basic needs met due to climate change impacts (Caney 2009: 127ff.). Other critics have argued that neither of the main justifications is cogent: atmospheric commons arguments are at best a weak and inconclusive defense of emissions rights equality since they do not uniquely support an equal right of citizens or states to emit greenhouse gases (Starkey 2011: 116–122) and respecting equal concern implies an equal right to emit no more than it does equal income since people will derive vastly different amounts of satisfaction from different bundles of either (Bell 2011: 36–37). Finally, the “forward-lookingness” of vital interest versions of the approach (this brand of emissions egalitarianism is little, if at all, concerned with past inequalities in per capita emissions) could be criticized for entailing that historically low, and historically high, emitting states should converge on roughly the same per capita emissions levels by the middle of the century. Converging on 2 tonnes of CO₂-equivalent per person, as recommended by the Garnaut Review, for example, will be rejected by states that ascribe to the popular view in the developing world that developed states should make a greater mitigation sacrifice than merely reducing their per capita emissions to the average global emissions level required to prevent dangerous climate change.

(4) *Emissions sufficientarianism*. In response to some of the problems facing emissions egalitarianism, some theorists have argued that emissions rights should be distributed so that citizens of every state have access to enough of the atmosphere’s capacity to meet their basic needs (such as nutrition, shelter, and basic health care) but not non-basic needs (such as access to air travel and many types of consumer good). As long as each person can meet their basic needs, and global emissions remain on the selected safe emissions trajectory, policy-makers need not aim to bring about an egalitarian pattern of international greenhouse emissions (Shue 1993: 55–56).

Vanderheiden, for example, posits an interconnected set of “basic rights” including a “basic right to climate stability,” a right to a “minimum per capita level of emissions,” and a “right to develop” in defending such a view (Vanderheiden 2008b: 64). Putting these climate change entitlements together, he argues, entails that “persons have a basic right to their survival emissions but they have lesser rights, if at all, to their luxury emissions” (Vanderheiden 2008a: 243). Such rights, which are posited as inalienable and therefore non-tradable, are possessed by all equally but their fulfillment rests on no present or future person being denied access to a “sufficient” amount of the assimilative capacity of the atmosphere.

The “basic rights” derivation of emissions sufficientarianism raises many of the usual problems associated with accounts of distributive justice that appeal to basic needs or decent lives, namely, the implausibility for many of the claim that there are no distributionally relevant inequalities in emissions, or any other type of scarce resource, above the point where all citizens have their basic needs met (Page 2006: 92–95). Another problem facing the approach is that of distinguishing, in a manner that would make the approach philosophically coherent and operationalizable in practical terms, between “luxury” and “subsistence” emissions (Gardiner 2011: 424–425). Perhaps the strongest objection to the approach, however, emerges from the identification it makes between “emissions sufficiency” and “personal sufficiency.” The problem here is that no particular distribution of emissions rights, or the economic value of these rights, would predictably maximize the number of people leading lives of a decent quality. This is because the quality of any particular human life is shaped by a broad range of subjective and objective factors and many of these factors are only loosely connected to the way in which the atmospheric commons is shared within or between generations.

I hope to have shown in this brief discussion that the “justice in emissions” problem has no technical solution. That is to say, *none* of the most commonly involved principles has yet been developed to deliver a normatively persuasive pattern of emissions when considered in isolation; and, though I have not the space to explore this thought further, solutions that appeal to more than one principle could be expected to generate no less intractable problems of justification and operationalization. Consequently, the practical contribution of the philosophical literature surveyed above does not seem to lie in its ability to supply a single view suitable for direct implementation by the institutions of the UNFCCC, but rather the clarification of some key normative issues prior to free and fair negotiations amongst state representatives seeking a principled, yet context-sensitive, distribution of emissions rights with which each state has reason to conform.

Which Burdens, Whose Responsibility?

Suppose an international agreement could be reached as to how much greenhouse gas each state, and thus the average citizen within that state, could justly exploit each year over the coming decades. The problem would remain of distributing amongst states the financial and non-financial burden associated with coordinating the structural, technological and attitudinal changes required to realize any preferred greenhouse emissions profile. The costs of effective adaptation, moreover, would also remain. Three principles have dominated the debate concerning how burdens of mitigation

and adaptation should be distributed amongst states and I survey the normative justification and distributive consequences of each below (Caney 2006, 2010; Page 2008, 2011; Dellink *et al.* 2009).

(1) According to the Contribution-to-Problem Principle (CPP), states should bear the costs of managing climate change and its adverse effects in proportion to their share of cumulative global greenhouse gas emissions. According to the standard operationalization of the CPP, each state would be allocated a share of the total cost of the global adaptation and mitigation response in relation to its overall contribution to anthropogenic climate change as measured in terms of the greenhouse gas emissions emanating from within its borders since 1750. At first glance, the CPP seems to provide a powerful interpretation of the principle of “common but differentiated responsibilities” adopted by the UNFCCC (1992: Article 3) as a basis for international burden sharing. This is because it links the distribution of climate burdens to the varying contributions of each state to the physical processes that drive climate change (Neumayer 2000: 187).

An immediate practical problem arising with the CPP is the problem of linking the *causes* of climate change (accumulations of atmospheric greenhouse gas of all states) with the disadvantageous human *effects* brought about by these accumulations (such as increases in morbidity and mortality in other states arising from extreme weather events) (Miguez 2002: 25–32; Gardiner 2011: 24–41). The national historical responsibility for climate change invoked by the CPP presupposes (i) the existence of identifiable harmful acts or events which (ii) befall identifiable agents such that (iii) they can be traced back to the climate-altering behavior of specific states. The problem is that these conditions appear at odds with certain integral features of the climate problem. Greenhouse gases, for example, are “well mixed” in that they become evenly distributed throughout the atmosphere shortly after being emitted irrespective of the nature of the activity involved or its geographical location. Since 1 tonne of CO₂-equivalent emitted *anywhere* results in the same amount of climate changing potential being exerted *everywhere*, robust and reliable protocols that trace particular climatic events to any particular state’s accumulated emissions currently lie beyond the grasp of climate modelers. Neither is it currently possible to identify any extreme weather events that would not have occurred “but for” anthropogenic climate change. Such considerations complicate greatly the attempt to specify the amount of adaptation or mitigation for which each state might be held accountable by the CPP (Allen and Lord 2004: 552).

On the assumption that the causation problem could be solved, perhaps through a probabilistic rather than a deterministic approach to climatic harm, additional normative objections could be raised against the CPP. First, should national responsibility for climate change be calculated in terms of the accumulated greenhouse gas released within the territorial borders of each state (the production method of apportionment) or in terms of the accumulated emissions released worldwide for which each state can be held accountable as the end-users of the associated activities (the consumption method of apportionment)? While the former method remains a central pillar of the UNFCCC architecture, the selection of apportionment method is a hotly contested issue on both normative and political grounds, in part because it would lead to very large variations in attributions of climatic responsibility in combination with the CPP (Garnaut 2011: 38).

Second, in grounding climate burden attributions on the causal processes whereby a state's cumulative greenhouse emissions contribute to adverse future outcomes, the CPP is open to the objection that states cannot reasonably be held responsible for much of the past greenhouse gas emitted by actors located within the borders of ancestral political units. The problem here is that there have been many instances when the continuity of state identity has broken down during the time frame in which the CPP must operate. The CPP, as a "backward-looking approach," does not cope well with the numerous changes evident in state boundaries due to wars, secessions, and internal political events that have transformed their institutional character since 1750. This is because these political changes seem to undermine the normative conditions for holding an existing state responsible for the cumulative emissions of ancestral geopolitical units as if they were one and the same entity (Caney 2006: 469–470; Miller 2009: 151ff.).

A third normative problem is that, although developed states may be causally responsible for the bulk of the CO₂ emitted since 1750, it is not at all clear that even constitutionally stable states should be held *morally* responsible for the cost of policy measures designed to manage the adverse effects of historical activities for which they could be held *causally* responsible. This is because attributions of moral responsibility, whether applied at the level of citizens or states, are generally thought to require more demanding standards of agential capability than those of causal responsibility. Thus, to be morally responsible for redressing a disadvantage an agent has contributed to causally, is in the process of causing, or is expected with great confidence to cause in the future an agent should have possessed the ability "to choose and to control his conduct in accordance with his choice" (Honoré 1999: 32). The problem in the climate context is that states seem to lack this ability as regards the majority of greenhouse emissions for which they can be held causally responsible since 1750 due to widespread ignorance of the climate problem amongst the policy-makers and general citizenry of most states until the late twentieth century. The implication of this "excusable ignorance" problem (Caney 2010: 208; Page 2011: 416–417) is that the CPP could apply only subsequent to a moment in history after which policy-makers in each state could not reasonably claim ignorance of, and hence the ability to control, the climate-changing activities for which they are causally responsible. Needless to say, the identification of a non-arbitrary time period over which the CPP would apply poses serious theoretical challenges not least because the moment at which policy-makers can no longer reasonably invoke the excusable ignorance defense will vary across states.

(2) According to the Ability-to-Pay Principle (or APP), states should bear climatic burdens in proportion to their relative capacities to bear such burdens: the more they are able to remedy climatic disadvantage in terms of implementing effective policies of mitigation and adaptation, that is, the more they should do so (Shue 1999: 537). All things being equal, the APP implies that the developed states should shoulder the burden of climate justice because they are uniquely able to harness their "mitigative capacity" and "adaptive capacity" both domestically and internationally. This superior mitigative and adaptive capacity comes as a result of various privileged features of high development including a greater ability to deploy viable low-emissions technologies; superior social and human capital in the relevant areas of social policy connected to successful adaptation; and a greater capacity to bear the

developmental sacrifices associated with emitting less greenhouse gas in general terms. In this way, the APP is a “forward-looking” rather than “backward-looking” justification of differential climatic burdens: the burdens associated with dealing with the negative externalities associated with climate change should be borne by the most able, irrespective of past behaviors that can be traced to subsequent modifications of the composition of the atmosphere.

At first glance, the APP has much to recommend it. As a forward-looking approach to climatic burden sharing it is not subject to the problems associated with the national excusable ignorance or national boundary problems. Moreover, it appeals to the common-sense conviction that, where issues of moral responsibility and liability are unclear, apportioning the greatest remedial burdens to states that have the capacity to solve a problem, and a significant interest in the problem being solved, amounts to a progressive solution to the climate problem. Nevertheless, the APP is questionable as a single-principle solution of the “justice in burdens” problem for at least three reasons.

First, a burden differentiation problem arises between “responsibly rich states” and “irresponsibly rich states.” Suppose two states enjoy a roughly equivalent capacity to respond to climate change but whereas one developed using highly efficient (climatically less damaging) technology, the other developed using far less efficient (climatically far more damaging) technology. Although the first state will have contributed far less to climate change, the APP applied in isolation implies that the climate burdens each should bear will be similar if not identical. This appears a rather implausible approach to the distribution of climatic burdens amongst rich states.

Second, a similar set of worries arises when developing world states are disaggregated into those that have begun to develop using low-carbon technologies and practices and those states that have begun to develop using more climatically damaging technologies and practices. Although it might be thought that *all* states must bear at least some climatic burdens to achieve a sustainable solution to the climate problem, it seems unfair to developing states which developed in a cleaner manner that they bear the same burden as developing states that did not. This thought experiment is not an exercise in science fiction since significant differences in cumulative emissions records exist amongst developing states with similar resources in terms of the income and wealth at their disposal (Boden *et al.* 2011).

Third, and perhaps most decisively, the APP leaves unanswered the deeper, normative, question of *why* those who have the most resources should bear the greatest climate burdens, other than because they *can* (Page 2008: 561–562). It may be the case that climatic burden allocation should be filtered through a weak “ought implies can” principle that excludes burdens being foisted on states that could only take on these burdens if they neglect the basic needs of their citizens. But a stronger “ought implies can” principle requiring that climatic burdens are attributed to states in proportion to a combination of their mitigative and adaptive capability irrespective of the origins of this capacity seems implausible in the absence of a background theory of global justice that makes sense of such attributions. Even armed with such a theory, moreover, the APP would not be a likely basis of a stable agreement amongst representatives of states seeking a climate agreement that none can reasonably reject as biased towards the interests of any of their number.

(3) According to the Beneficiary Pays Principle (or BPP), states should bear climatic burdens in proportion to how much they have benefited from the economic and social activities associated with the rise in concentrations of greenhouse gas since 1750. For a state not to pay their fair share of the cost of the climate response as determined by the BPP would be unjust as it would amount to profiting from environmental damaging activities originating within and between its territorial boundaries (Gosseries 2004: 43–46; Page 2011: 420–422). It could be maintained that the economies of all states have benefited from agricultural and industrial activities that have released greenhouse gas into the atmosphere since 1750. Nevertheless, developed states are picked out by the BPP as having a peculiarly strong responsibility to bear climate burdens because their high development can be traced fairly directly to past and present activities, such as access to abundant energy supplies sourced from fossil-fuel combustion, that drive climate change.

As described, the BPP has certain theoretical advantages over the APP and CPP. The BPP is in one respect superior to the CPP since it avoids the problem of holding present-day states morally responsible for the behavior of ancestral political units. The BPP is also not prone to the production/consumption apportionment problem since it focuses on the ultimate destination of the benefits produced by greenhouse gas-emitting activities and not the jurisdictional origins of global greenhouse gas emissions. The BPP also seems superior to the APP in the important respect that it offers an explanation of the special responsibility of developed states that is not reducible to the mere fact of their superior wealth. Despite its advantages, however, the BPP is a controversial, and relatively undeveloped, basis for climatic burden attribution. One reason for this is that it has struck some theorists as unfair to require later generations to surrender benefits in order to sponsor policies of mitigation and adaptation when earlier generations have enjoyed similar benefits and not surrendered any benefit (Caney 2006: 473). This “chronological unfairness” objection is especially troublesome in contexts where some states have consumed or despoiled the benefits they inherited from industrialization, since the most obvious interpretation of the BPP is to restrict “burden disgorgement” to states that have retained climate-change-linked benefits and, moreover, can surrender these benefits without thereby subjecting their own citizens to great hardship.

A second problem for the BPP is that it is immensely difficult to separate the part of the present wealth of developed states that arose from activities that caused climate change from the part that can be attributed to other factors. The BPP, then, seems incapable of being fully operationalized. One dimension of this problem is that distinguishing between the two types of wealth presupposes a distinction between benefits that were “caused” by fossil-fuel-driven industrialization (“climatic benefits”) and benefits that merely “correlated” with fossil-fuel-driven industrialization in that they owe their origins for the most part to historical contingency or entrepreneurial flair (“non-climatic benefits”). If no clear distinction can be discerned between climatic and non-climatic benefits then it will not be possible to distinguish between the benefits an agent should be prepared to sacrifice to combat climate change and the benefits that an agent should be permitted to retain as the expression of activities independent of climate change. Since the CPP and APP do not trace climate burdens to the receipt of climate benefits, they do not face the problem of benefit identification or disaggregation.

I hope to have shown in this brief discussion that none of the three common justifications of differential national climatic responsibility has yet to be formulated in a way that would deliver, in isolation, a plausible solution to the “justice in burdens” problem. Though I do not have the space to demonstrate it here, it is at best unclear whether hybrid solutions will prove any more successful in this task (Page 2011: 425–426). As with the “justice in emissions” problem, then, there appears to be no technical solution to the “justice in burdens” problem: parties to the UNFCCC must negotiate a solution that balances the strengths and weaknesses of alternative principles through a process of negotiation that furnishes the resulting agreement with a measure of normative legitimacy that is independent of any philosophical account of the selected burden-sharing rules.

Climate Change Justice and the Global Policy Mix

How might our best solutions to the “justice in emissions” and “justice in burdens” problems be translated into an effective set of climatic institutions, policies, and mechanisms? Let us focus, for the purposes of simplicity, on climate mitigation policy. The full range and content of mitigation policies defies analysis in the space available, but the main options can usefully be summarized as the following (Gupta and Tirpak 2007: 56–59; Stern 2007: 349–354):

1. *Direct governmental regulation* (e.g. limits on industrial or household greenhouse gas emissions enforced by legal rules and orders).
2. *Government expenditure* (e.g. subsidies designed to encourage renewable energy use in developed states or research and development assistance for developing states seeking to implement low-carbon technologies).
3. *Market-based mechanisms* (e.g. carbon tax or emissions trading schemes designed to make participating firms or states internalize the full social costs of their exploitation of the atmospheric commons).
4. *Voluntary measures* (e.g. energy efficiency agreements reached between regulators and associations representing particular economic sectors).
5. *Informational measures* (e.g. environmental labeling of consumer products and services).

An extensive literature has now emerged seeking to evaluate climate policies such as those listed above, as well as the domestic and international policy frameworks that systematize these policies, according to a range of normative considerations (see, for example, Bodansky 2004: 19–62). Such evaluations are generally framed in terms of two types of normative desiderata. “Consequentialist” (or “teleological”) reasoning evaluates acts and social policies according to the way in which their expected outcomes fit with some desired set of outcomes such as the equalization of welfare or fulfillment of basic needs. Here, the justness of a climate policy is specified by the desirability of its expected outcomes. “Non-consequentialist” (or “deontological”) reasoning, by contrast, evaluates acts or social policies in terms of the legitimacy or fairness of their origins. Here, the justness of a climate policy is specified independently of the desirability of its expected outcomes. The distinction between outcomes and procedures is a useful starting point for the normative analysis

of alternative climate policies and policy frameworks, and both types of principle play a vital public motivation role in securing support from citizens and policy-makers for an effective international climate response. Here, due to space constraints, I discuss briefly three normative desiderata that can be applied to policy solutions to the “justice in emissions” and “justice in burdens” problems.

Economic Efficiency

Economic efficiency, in the climate policy context, is a consequentialist desideratum, meaning quite simply that the international community should seek to prevent dangerous climate change using the most affordable possible means available. Thus, according to the text of the UNFCCC (1992: Article 2), “policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost.” The demand for economic efficiency in climate policy-making draws on the common-sense normative idea that no public policy should impose more costs than are required to secure the environmental quality benefits it is designed to bring about. To implement a cost-inefficient policy response to climate change would, according to this line of argument, violate the consequentialist norm that environmental policies should not be adopted that bring about a lower quality of life for existing and future generations than could have been secured through an alternative policy response.

If economic efficiency was the only consideration of relevance to climate policy beyond the primary desideratum of environmental effectiveness, climate policy would simply seek to equalize the marginal mitigation and adaptation costs of all atmospheric users with the selection of policy mechanisms being wholly derivative to this aim. Consider climate mitigation policy. The idea here is that the global policy response should bring about a situation where atmospheric users located in each state will only emit an additional unit of CO₂-equivalent if no other atmospheric user located in this, or another state, could produce more benefit by doing so. However, minimizing marginal mitigation costs in the early stages of the global climate response could result in the achievement of a lower probability of avoiding dangerous climate change since there may be economically inefficient policy combinations that lead to a more speedy stabilization in global concentrations of greenhouse gases. In this sense, climate mitigation policy is inherently a matter of balancing “the costs of action and the perils of inaction” and thus involves profound issues of balance between lower/higher mitigation and lower/higher net economic costs of mitigation policies (Nordhaus 2007: 687).

Distributive Equity

Distributive equity concerns the just distribution of resources and opportunities across agents possessing competing needs, interests, and entitlements. As we have seen, climate change justice cannot truly be said to obtain until a just distribution of climatic entitlements, and burdens associated with enforcing those entitlements, exists amongst states. However, an additional problem arises from the need to avoid a situation whereby the global response to climate change introduces new inequalities

in the distribution of resources in other spheres of human life or exacerbates previously existing inequalities in these spheres. The problem is that it is far from obvious which principles of justice should be used to settle distributive conflicts between the alternative climate policies described above. There is a need to incorporate norms of fair process and environmental responsibility into our evaluation of rival policies, and the impact of policies of mitigation and adaptation on established goals of global development must also be taken into consideration. We might call this the “global equity” problem. The global equity problem arises not merely because different combinations of policies, as well as different approaches to the reconciliation of the various normative desiderata of climate policy, will affect the interests of different populations in different ways but also because these populations will *value* these effects according to different desiderata.

The complexity of the global equity problem can be illustrated through an example from the literature on climate mitigation policy-making. A broad range of economists and policy-makers favor the imposition of a transparent, and increasing, price being placed on greenhouse emissions worldwide as an effective means of achieving economically efficient and environmentally effective climate mitigation (Nordhaus 2007; Stern 2007; Garnaut 2011). The normative problem that global carbon pricing raises is that it expresses inequality of opportunity. Rich and poor states could not possibly participate on fair and equal terms since the former could draw on their superior financial resources to emit far more greenhouse gas than the latter. The danger here is that developing states that participate in such international emissions trading schemes would be encouraged to reduce their current emissions at the cost of their development goals as a consequence of the core objective of the scheme to discourage emissions amongst all but the most efficient converters of emissions into economic benefits. In this way, the concern to maximize the economic efficiency of the global climate response could endanger the achievement of established goals of global equity and development such as those entrenched into the UN Millennium Development Goals.

Political Legitimacy

Following Buchanan and Keohane (2006: 411), to claim that an institution is legitimate means that it is “morally justified in making rules and attempting to secure compliance with them” and that agents “subject to those rules have moral content-independent reasons to follow them and/or to not interfere with others’ compliance with them.” A climate governance institution or policy will be legitimate in this *normative* sense so long as the agents whose conduct it constrains have moral reasons to conform to, and support publicly, the rules propagated that do not turn on the specific content of these rules (Bodansky 1999: 601–602). Climate governance institutions and policies will be, in addition, *sociologically* legitimate if there is a widespread belief amongst relevant affected agents that the political authority involved has been wielded justifiably (Eckersley 2007: 307–308). There are two key qualities separating legitimate and illegitimate climate institutions. “Participatory legitimacy” requires that agents whose behavior or condition is modified by climate policy play an active role in its construction and implementation such that they enjoy a genuine sense of ownership over the rules and norms propagated by the institution (Paavola 2005:

314). “Accountability legitimacy,” by contrast, requires that agents whose behavior is constrained by climate institutions and policies are adequately informed of the aims, objectives, and mechanisms associated with the climate response and, in addition, that they possess the capacity to sanction the associated institutions in the event of abuse of power or other violations of duty (Hale 2008: 75–76).

As has been shown by many studies of transnational and global environmental policy, both properties are vulnerable in the climatic context, and tensions swiftly arise between these qualities and norms of economic efficiency and environmental effectiveness. Thus, popular market-based policies, such as emission trading or carbon tax schemes, tend to purchase economic efficiency benefits at the cost of removing democratic controls on the spatial location of desired mitigation activity, which atmospheric users must perform these actions, or what sort of technology should be used (Baldwin 2008). Direct government regulation of emissions installations and subsidies for low-carbon energy technologies, moreover, despite shifting control over climate policy one step nearer the level of citizens and other non-state actors, do so at the apparent cost of forgoing the potential of market-based mechanisms to promote environmental quality more cost-effectively (Stern 2007: 351–367; Garnaut 2011: 77–88). In this way, climate policies, and the architectures that systematize them, are subject to a permanent legitimation crisis arising from attempts to reconcile fair processes with effective and affordable environmental outcomes (Eckersley 2007: 307–308).

In the above, I briefly explored the normative desiderata of climate policy that shape the background for the “justice in emissions” and “justice in burdens” problems. For a third time, we find that there is no obvious technical solution to the practical application, or reconciliation, of the various desiderata. First, how should we characterize the relationship between the various desiderata? It seems fairly clear that environmental effectiveness is of preeminent importance and should be allocated some priority over subsequent desiderata. But how do cost efficiency, distributive equity, and political legitimacy relate to one another? Second, how might the various desiderata be applied across political, social, and cultural boundaries? It is tempting to believe that the normative approach selected for one jurisdiction will also be suitable for extension to other jurisdictions. But this itself threatens the acknowledgment of the values contained in some of the desiderata themselves, in particular distributive equity and political legitimacy.

Conclusion

In this chapter, I have aimed to provide the reader with a sense of the progress that normative theorists have made in clarifying the concept of climate change justice and suggested how it might contribute to the construction of global climate policy. We have found that neither normative theorists nor policy analysts have been able to define a uniquely plausible, and practically useful, solution to any of the three problems of climate justice that could be adopted in an action-guiding manner prior to negotiations amongst parties to the UNFCCC. This is not necessarily a cause for alarm, either normatively or practically. While normative theorizing can help clarify rival burden-sharing principles for policy-makers and negotiators – as well as explore the fit between these principles and established norms of justice – the selection of

policies of mitigation and adaptation is best seen as a matter of deliberation amongst states seeking agreement on a climate solution that none could reasonably reject. The approach suggested here rejects both the pessimistic vision of “climate change realists” (who tend to view global climate policy-making as a mere matter of politics and power) and the reductionist theorizing of many “climate change idealists” (who tend to reduce the problem of international climate negotiations to a matter of imposing a favored normative approach to the three problems as if they were soluble to a technical or “moral mathematical” solution). Normative theory, by contrast, is a more subtle weapon in the arsenal of the global climate community if it is conceived as a mechanism whereby principles can be articulated, developed, and interpreted before being injected into a process of free and fair negotiation that has no predetermined conclusion.

References

- Adger, Neil. 2010. “Climate Change, Human Well-Being and Insecurity.” *New Political Economy*, 15(2): 275–292.
- Allen, Myles and Richard Lord. 2004. “The Blame Game: Who Will Pay for the Damaging Consequences of Climate Change?” *Nature*, 432, December 2: 551–552.
- Baer, Paul and Tom Athanasiou. 2002. *Dead Heat: Global Justice and Global Warming*. New York: Seven Stories Press.
- Baldwin, Robert. 2008. “Regulation Lite: The Rise of Emissions Trading.” *Regulation and Governance*, 2(2): 193–215.
- Bell, Derek. 2011. “Climate Duties, Human Rights and Historical Emissions.” In *China’s Responsibility for Climate Change*, ed. Paul Harris, 25–46. Bristol: Policy Press.
- Bodansky, Daniel. 1999. “The Legitimacy of International Governance: A Coming Challenge for International Environmental Law?” *American Journal of International Law*, 93(3): 596–624.
- Bodansky, Daniel. 2004. *International Climate Efforts beyond 2012: A Survey of Approaches*. Washington, DC: Pew Center on Global Climate Change.
- Boden, Tom, Gregg Marland, and Bob Andres. 2011. *Global, Regional, and National Fossil-Fuel CO₂ Emissions*. Oak Ridge, TN: Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, US Department of Energy. doi:10.3334/CDIAC/00001_V2011.
- Buchanan, Allen and Keohane, Robert. 2006. “The Legitimacy of Global Governance Institutions.” *Ethics and International Affairs*, 20(4):405–437.
- Caney, Simon. 2006. “Environmental Degradation, Reparations, and the Moral Significance of History.” *Journal of Social Philosophy*, 37(3): 464–482.
- Caney, Simon. 2009. “Justice and the Distribution of Greenhouse Gas Emissions.” *Journal of Global Ethics*, 5(2): 125–146.
- Caney, Simon. 2010. “Climate Change and the Duties of the Advantaged.” *Critical Review of International Social and Political Philosophy*, 13(1): 203–228.
- Dellink, Rob, Michel Den Elzen, Harry Aiking *et al.* 2009. “Sharing the Burden of Financing Adaptation to Climate Change.” *Global Environmental Change*, 19: 411–421.
- Eckersley, Robin. 2007. “Ambushed: The Kyoto Protocol, the Bush Administration’s Climate Policy and the Erosion of Legitimacy.” *International Politics*, 44: 306–324.
- European Commission. 2011. *A Roadmap for Moving to a Competitive Low Carbon Economy*. Brussels: European Commission, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0112:FIN:EN:PDF> (accessed March 11, 2012).
- Gardiner, Stephen. 2010. “Ethics and Climate Change: An Introduction.” *Wiley Interdisciplinary Reviews: Climate Change*, 1: 54–66.

- Gardiner, Stephen. 2011. *A Perfect Moral Storm: The Ethical Tragedy of Climate Change*. Oxford: Oxford University Press.
- Garnaut, Ross. 2011. *The Garnaut Review 2011: Australia in the Global Response to Climate Change*. Cambridge: Cambridge University Press.
- Gosseries, Axel. 2004. "Historical Emissions and Free-Riding." *Ethical Perspectives*, 11(1): 36–60.
- Gupta, Sujata and Dennis A. Tirpak. 2007. "Policies, Instruments and Co-operative Arrangements." In *Climate Change 2007: Mitigation*, ed. Bert Metz, 745–807. Cambridge: Cambridge University Press.
- Hale, Thomas N. 2008. "Transparency, Accountability and Global Governance." *Global Governance*, 14(1): 73–94.
- Honoré, Tony. 1999. *Responsibility and Fault*. Oxford: Hart Publishing.
- Meinshausen, Malte, Nicolai Meinshausen, William Hare *et al.* 2009 "Greenhouse-Gas Emissions Targets for Limiting Global Warming to 2 °C." *Nature*, 458, April 30: 1158–1162.
- Meyer, Aubrey. 2000. *Contraction and Convergence: The Global Solution to Climate Change*. Bristol: Green Books.
- Miguez, José. 2002. "Equity, Responsibility and Climate Change." In *Ethics, Equity and International Negotiations on Climate Change*, ed. Luiz Pinguelli-Rosa and Mohan Munasinghe, 7–35. Cheltenham: Edward Elgar.
- Miller, David. 2009. "Global Justice and Climate Change." In *The Tanner Lectures on Human Values*. Salt Lake City: University of Utah: 119–156.
- Neumayer, Eric. 2000. "In Defence of Historical Responsibility for Greenhouse Gas Emissions." *Ecological Economics*, 33: 185–192.
- Nordhaus, William D. 2007. "A Review of the Stern Review on the Economics of Climate Change." *Journal of Economic Literature*, 45(3): 686–702.
- Paavola, Jouni. 2005. "Seeking Justice: International Environmental Governance and Climate Change." *Globalizations*, 2(3): 309–322.
- Page, Edward A. 2006. *Climate Change, Justice and Future Generations*. Cheltenham: Edward Elgar.
- Page, Edward A. 2008 "Distributing the Burdens of Climate Change." *Environmental Politics*, 17(4): 556–575.
- Page, Edward A. 2011. "Cashing In on Climate Change: Political Theory and Global Emissions Trading." *Critical Review of International Social and Political Philosophy*, 14(2): 59–79.
- Parry, Martin L., Osvaldo F. Canziani, and Jean Palutikof. 2007. "Technical Summary." In *Climate Change 2007: Impacts, Adaptation and Vulnerability*, ed. Martin Parry, Osvaldo F. Canziani, and Jean Palutikof *et al.*, 23–78. Cambridge: Cambridge University Press.
- Shue, Henry. 1993. "Subsistence Emissions and Luxury Emissions." *Law & Policy*, 15(1): 39–60.
- Shue, Henry. 1999. "Global Environment and International Inequality." *International Affairs*, 75(3): 531–545.
- Singer, Peter. 2002. *One World: The Ethics of Globalization*. London: Yale University Press.
- Starkey, Richard. 2011. "Assessing Common(s) Arguments for an Equal Per Capita Allocation." *Geographical Journal*, 177(2): 112–126.
- Stern, Nicholas. 2007. *The Economics of Climate Change: The Stern Review*. Cambridge: Cambridge University Press.
- Traxler, Martino. 2002. "Fair Chore Division for Climate Change." *Social Theory and Practice*, 28(1): 101–134.
- United Nations Framework on Climate Change (UNFCCC). 1992. "United Nations Framework Convention on Climate Change," <http://unfccc.int/resource/docs/convkp/conveng.pdf> (accessed October 20, 2012).
- United Nations Framework on Climate Change (UNFCCC) 1997. "The Kyoto Protocol to the United Nations Framework Convention on Climate Change," <http://unfccc.int/resource/docs/convkp/kpeng.pdf> (accessed October 20, 2012).

-
- United Nations Framework on Climate Change (UNFCCC) 2011. "Report of the Conference of the Parties on its Sixteenth Session. Part Two: Action Taken by the Conference of the Parties at its Sixteenth Session," <http://unfccc.int/resource/docs/2010/cop16/eng/07a01.pdf> (accessed October 20, 2012).
- Vanderheiden, Steve. 2008a. *Atmospheric Justice: A Political Theory of Climate Change*. Oxford: Oxford University Press.
- Vanderheiden, Steve. 2008b. "Climate Change, Environmental Rights, and Emissions Shares." In *Political Theory and Climate Change*, ed. S. Vanderheiden, 43–66. Cambridge, MA: MIT Press.