

Distributive Justice and Climate Change¹

Forthcoming in

Oxford Handbook of Distributive Justice (Oxford: Oxford University Press)

Edited by Serena Olsaretti

Abstract: This chapter considers two questions of distributive justice that arise when we face dangerous climate change. The first (the *Just Target Question*) concerns what balance to strike between ensuring that moral subjects are not harmed by climatic changes and ensuring that the policies required to prevent harmful climatic changes are not unduly onerous. The second (the *Just Burden Question*) concerns how the costs involved in combating dangerous climate change should be distributed among duty-bearers. The chapter identifies several methodological issues we need to confront to address these questions. In addition to this, it outlines how one might answer the *Just Target Question*, and evaluates several leading accounts of how to answer the *Just Burden Question*. One central finding is that the issues of justice raised by climate change cannot be treated in isolation but must be analysed as part of a more general global and intergenerational account of justice.

Keywords: Atomism, Climate Change, Holism, Integrationism, Isolationism, Polluter Pays, Ability to Pay.

Climate change raises many questions of distributive justice. The increase in temperatures, the rising sea levels and the severe weather events associated with climatic changes will all have dire consequences for human and nonhuman life. For example, climate change jeopardizes many people's access to food. The increase in temperatures will lead to desertification and crop failure, and rising sea levels will also disrupt agriculture. Climate change also has disastrous effects on people's health: it will see an increase in the spread of food-borne, water-borne and vector-borne diseases, as well as other infectious diseases. In some cases it will result in loss of life (for example, through heat stress and disease). Severe weather events will wreak havoc with people's homes, livelihoods and the infrastructure.² In the face of these challenges we are confronted by

¹ I am grateful to Serena Olsaretti and Henry Shue for their illuminating comments. Research on this was supported by the Oxford Martin School, and I am grateful to it for its support.

² These impacts are comprehensively documented by the Intergovernmental Panel on Climate Change. Its reports – including the most recent one (the *Fifth Assessment Report*) – can be found here: www.ipcc.ch.

many questions of distributive justice. Who is entitled to what level of protection? Who is responsible for bearing the burden of addressing climate change? How should rights to emit greenhouse gases be distributed?

This chapter examines some of these issues. The chapter is structured as follows. I begin, in Section I, by delineating two distinct questions of distributive justice raised by climate change. Stated very roughly, one question concerns how much protection is owed to the potential victims of climate change (the *Just Target Question*), and the second concerns how the burdens (and benefits) involved in preventing dangerous climate change are distributed (the *Just Burden Question*). In Section II, I focus on the first of these questions, the *Just Target Question*. The rest of the paper examines the second question, the *Just Burden Question*. To answer this question, I argue, it is necessary to address two important methodological questions. Sections III-V, thus, set out and explore these two methodological issues. Having done so, the paper then turns from methodological issues to substantive analysis, and in Section VI it examines three principles of distributive justice that, it has been suggested, should determine how the burden of addressing dangerous climatic changes should be distributed.

I: Two Questions

Let us begin then by identifying the questions of distributive justice that arise. As noted above, I think we can identify at least two important questions of distributive justice.

I.1. One important question concerns what balance to strike between, on the one hand, ensuring that moral subjects are not harmed by climatic changes³, and, on the other hand, ensuring that the policies that would be required to prevent harmful climatic changes do not impose excessive

³ Note that I use the phrase ‘not harmed by climatic changes’ as a shorthand to refer to actions which either prevent the climatic changes from occurring (often termed Mitigation) or which prevent the changes that do occur from being harmful (often termed Adaptation) or by some combination of the two. For further discussion of Mitigation and Adaptation see below.

burdens on people. Climate change is not an all-or-nothing affair. There are different degrees of change. According to one widely held view, climate policy should aim for a world in which the global mean temperature is no more than 2°C higher than pre-industrial times. Some, though, think that this is too lax and call for more stringent targets – such as one in which global mean temperatures are no more than 1.5°C higher. Alternatively we might aim for a less demanding target, calling, for example, for temperature increases of no more than 3°C.⁴ These different targets will result in different impacts: the higher the permissible increase, the more dire the outcomes. At the same time, the more we aim for a smaller increase in global mean temperatures the more onerous the burden that it will place on the duty-bearers.

The burdens involved in preventing harmful climate change can be quite demanding. I will outline the kinds of burdens more systematically below when discussing the second question. Here some examples will suffice to give some sense of what is at stake. To take one major burden: climate policies normally impose burdens on those allocated responsibilities to prevent harmful climatic changes, such as requiring them to forego certain activities so that they keep their emissions of greenhouse gas emissions within an acceptable limit.⁵ In addition to this, climate policies may also have an opportunity cost, and some would benefit if the resources devoted to combating climate change were spent elsewhere. For example, some might be worse off as a result of climate policies because the funds being used to enable people to live with climatic changes, or the funds needed to support clean technology, could have been spent on other things, such as research into infectious diseases.

⁴ Note, one might also query the assumption that the target should be defined in terms of temperature increases at all, and, if it should, whether it should be defined in terms of global mean temperature increases.

⁵ I say ‘normally’ because in some cases the discharging of a responsibility can result in co-benefits (including for those discharging the duty). A co-benefit is a beneficial side-effect. For example, levying carbon taxes may discourage people from driving, and as well as mitigating climate change might also have beneficial effects on physical fitness and air quality.

We thus face a situation in which permitting climatic changes imposes harms on people (the magnitude of which will vary depending on just how severe the changes are and how much is spent on adaptation); and yet also preventing harmful climatic changes also imposes burdens on people (the magnitude of which will vary depending on how ambitious are the climate policies). With this in mind, we can now see that one question of distributive justice is:

Q1: The Just Target Question: What is the fair distribution of burdens and benefits between on the one hand, those who will bear any impacts of climatic changes, and, on the other hand, those who will be adversely affected by the implementation of a policy that prevents or minimizes harmful climatic changes?

I.2. Suppose that we choose a certain target for climate policy. Suppose, for example, that we accept the conventional 2°C target. Achieving this goal will incur considerable costs. Given this, we now face a second question of distributive justice, namely

Q2: The Just Burden Question: What is the fair distribution of the burdens (and benefits) of adopting policies that address climate change?

As I noted above, there is a variety of different burdens. We can identify three distinct kinds of burden that are relevant to *Q2*. The first two correspond to two kinds of responsibility. Thus, one kind of burden is the cost of what climate scientists refer to as *Mitigation*, where this is understood as reducing the extent to which humans affect the climate system by affecting the volume of greenhouse gases in the atmosphere. Mitigation can take the form of lowering the flow of greenhouse gas emissions or increasing the extent to which greenhouse gas sinks absorb greenhouse gases. Mitigation is often, although not always, burdensome to those who engage in it. A second burden is that involved in enabling *Adaptation*. I define adaptation as changes in the social, economic and political systems that reduce the extent to which climatic changes undermine people's entitlements. Adaptation can take many forms. For example, to prevent increased heat from killing people from heat stress, one might design buildings with better access to cool air; to prevent the dire effects of storm surges one might install better weather warning systems and more robust sea walls; and so on. The key point is that Mitigation addresses the prospect of dangerous climate change by minimizing the climatic changes, whereas Adaptation

addresses it by reducing the harmful impacts of those climatic changes on people's entitlements. Again, those engaging in Adaptation policies normally incur costs.

We should record a third kind of burden. The first two concern burdens that are borne by agents when they discharge some kind of climatic responsibility. Sometimes, however, the policies enacted to combat climate change may impose costs on persons other than those implementing the policy: they sometimes impose harms on third parties. For example, using nuclear energy instead of fossil fuels may put the health of some (including those not duty-bound to reduce emissions) at risk. These burdens too need to be borne in mind.⁶

With this taxonomy of burdens in mind we can now return to the initial formulation of the *Just Burden Question*. Its reference to the 'the burdens (and benefits) of adopting policies that address climate change' should be understood to refer to these three kinds of burden. Thus the question posed by the *Just Burden Question* is: What is the fair distribution of these three kinds of burdens (and any associated benefits) that result from mitigating and adapting to climate change?

A number of different principles of justice have been proposed. Three in particular are worth noting at the outset. First, some argue that the relevant principle for distributing the burdens involved in preventing dangerous climatic changes focuses on who has brought this problem about. They hold that those who have caused the problem should pay. This is often referred to

⁶ For completeness' sake we should also note a fourth kind of burden, namely *Compensation*. Suppose that people do not engage in sufficient Mitigation (so create climatic changes) and do not provide adequate Adaptation (so the climatic changes leave people unable to enjoy their entitlements). Then those who lack their entitlements have been harmed and are entitled to compensation. In the international negotiations this is now discussed under the heading of 'loss and damage'. Since this Handbook is a volume on distributive justice, rather than corrective justice, I shall not, however, discuss compensation burdens further.

as the *Polluter Pays Principle*.⁷ Others have defended a second principle, the *Ability to Pay Principle*. This holds that agents should bear the burden in proportion to their ability to pay. A third principle that has been invoked maintains that the burden should be borne by agents in accordance with the extent to which they have benefited from greenhouse gas emissions – the *Beneficiary Pays Principle* (Caney 2005, p.756). These principles will be discussed later on, but it is useful to introduce them here so that when we consider the methodological issues we are aware of what kind of principles are most commonly invoked. Doing so will also help illustrate the methodological issues that arise.

Before moving on, one particular question concerning the *Just Burden Question* should be mentioned. The question I have in mind is one that arises only in the context of mitigating climate change. Since mitigation involves limiting the emission of greenhouse gases it raises a particular question that does not arise in the case of adaptation, that is: What (if anything) would be a fair distribution of greenhouse gases.⁸ Some reply that a fair distribution is one in which rights to emit greenhouse gases are shared equally (Meyer 2000). Others argue that a fair distribution is one that best enables the least advantaged to develop. They defend what has been termed the ‘Greenhouse Development Rights’ approach (Baer et al 2008). Others hold that a fair distribution of emission rights would mirror the current, or past, distribution of emissions. This position – known as “grandfathering” – allocates emissions to reflect the level of emissions that agents had at some point in the past (Bovens 2011). This brief list is not exhaustive, but it gives some sense of some of the positions espoused.

One final clarificatory point is in order. In distinguishing between the two questions I am *not* claiming that they should be treated wholly separately. One can quite coherently think that there are two distinct *questions* but also that the right way to *answer* them is to draw on a common

⁷ Some think that this term should not be employed to refer to the view that those who have polluted in the past should pay, arguing that the ‘Polluter Pays Principle’ is an entirely forward-looking principle: (Ally and Beckerman 2014, pp.90-91; and Shue 2014, p.184).

⁸ Space precludes examining this issue here. For discussion see Caney (2012a).

normative theory. Indeed, as will emerge, this is precisely what I will argue. Consider an analogy from the ethics of war. It is common to distinguish between (at least) two questions about the ethics of waging war - when to wage war (*jus ad bellum*) and how to wage war (*jus in bello*). While some – such as Michael Walzer – think that the answers to the two questions should be derived independently from each other, others such as Henry Shue argue for grounding both in a common normative theory.⁹

II: Question 1 – What Level of Protection?

Having identified two key questions, I will begin with the *Just Target* question. How should we go about answering this question? Of course, one familiar way of thinking about it is to employ cost benefit analysis. This would assess the harms (and benefits) caused by climate change and determine what costs to people’s well-being or resources or whatever metric one employs would occur at what level of change. It would also calculate the costs and co-benefits associated with mitigation and adaptation policies, again determining what the costs and benefits would be with more and less ambitious mitigation and adaptation policies. Having ascertained the costs and benefits of both climate change and also of climate change policies it would then, of course, recommend whichever policy results in the greatest net benefit.

Some, such as Bjørn Lomborg (2001), have, in fact, reasoned in exactly this way. Lomborg’s analysis of the empirical data on climate change has been questioned by many (eg Cole 2003), but the aspect that is of particular relevance to our analysis here is his endorsement of a basically utilitarian approach to help think about the *Just Target Question*.

Of course, one standard objection to utilitarianism is that it results in injustice, and thus many have developed accounts of distributive justice as an alternative to utilitarianism. These

⁹ See Walzer’s affirmation of “[t]he dualism of *jus ad bellum* and *jus in bello*” (1977, p.21: also pp.123-124 & 326) and Shue’s alternative (2005, esp pp.737-738).

have, however, rarely (if ever) been applied to the *Just Target Question*. In fact it is striking how little normative reflection there has been by philosophers on the *Just Target Question*.¹⁰

How then should we apply a theory of distributive justice to answer the *Just Target Question*? Any such account would have to have two features. First, since climate change is a global phenomenon (in the sense that the causes are spread throughout the world and the effects are too) applying principles of justice within societies would not be sufficient. To determine what target to aim for therefore requires a theory of global justice. Second, we need an account of justice that can cope with the intergenerational character of climate change. This holds for several reasons. In the first place, since climate change results at least in part from the emissions of previous generations, we need to know to what extent members of one generation can inherit obligations from the actions of previous generations. Furthermore, since many of the adverse effects of climate change fall on future generations we need to consider what obligations one generation owes to succeeding generations. For example, may one generation discount the interests of future generations? In addition to this, when determining how to answer the *Just Target Question* we also need to consider whether it is permissible to pass some of the burdens of combating climate change on to future generations (a position advanced by Broome 2012; Caney 2014). If, for example, it is not then all the costs of mitigation fall on current generations. This, in turn, might entail that less mitigation is justified than would otherwise be the case.

Answering the *Just Target Question*, thus, requires a theory of global and intergenerational justice. Deriving such a theory is, of course, highly challenging, and it is certainly beyond the ambitions of this chapter. So, rather than attempt to do that in the space available here, this chapter will merely illustrate the challenge by outlining two different accounts and exploring their implications.

A sufficientarian approach: Consider, for example, a sufficientarian approach. Suppose, moreover, that it is claimed that this should apply to everyone in the world and that it should not be subject to any pure time discounting, and thus, that all persons in the world throughout time should be

¹⁰ For one exception see Heyward (forthcoming).

above this threshold. In answer to the *Just Target Question*: this would maintain, first, that the target of climate policy should ensure that all are above the specified threshold.

(In parenthesis: we might also note here that such an approach would also have implications for the *Just Burden Question*. In a world of reasonable abundance it entails that the ascription of responsibilities to combat climate change, and the selection of which climate policies to adopt, should leave everyone above the sufficiency threshold.)

In short, so long as climate policies are implemented which ensure (a) that there are not climatic changes which push people beneath the sufficiency level and (b) that the costs of realizing (a) does not push people beneath the sufficiency level then justice would have been done. Depending on what the sufficiency level is – and existing levels of abundance - this might mean that a number of different climate targets satisfy the sufficientarian standard. At the same time, however, it might also be the case (especially with high levels of noncompliance and/or with a high sufficiency level) that it is not possible to achieve both (i) the just target (so secure a safe climate system) and (ii) do so without adopting mitigation and adaptation policies that themselves push some people below the sufficiency threshold. In such a case, we need a further principle to help guide us.

To get more of a sense of how to approach the *Just Target Question*, we might also consider other distributive principles. For example, some will object to a purely sufficientarian approach. Imagine, they might say, situations in which climate change greatly impacts on the standard of living of people but yet even with the onset of climate change they are above the sufficiency threshold. Suppose, for example, that their property is harmed or that the company they have created is ruined by rising sealevels, but that they are above the sufficientarian baseline. Now, ex hypothesi, a purely sufficientarian approach to climate change policy is insensitive to the loss experienced by those in this situation.

An egalitarian approach. With this in mind, some might propose an egalitarian principle. This would differ from a purely sufficientarian approach in several ways. First, when considering what the target should be it would take into account not simply the fact that climate change

pushes people below some threshold, but also whether climatic impacts exacerbate existing inequalities or create new ones, including inequalities above any sufficiency threshold. Second, it would consider whether the burden associated with preventing climate change would worsen inequalities. Suppose, for example, that it is possible to prevent climatic changes that result in some being above the sufficientarian threshold but still having less than they would under an egalitarian world; and, suppose that it is possible to allocate the burden of preventing climate change in ways that would not undermine the cause of equality. Then egalitarians would do that. This might call for a more stringent target than a sufficientarian one (as well as a different regime of burden-sharing).

This discussion of two possible principles is necessarily brief. However, it brings to light several points that are worth emphasizing. The first is that answering the *Just Target* question requires a comprehensive theory of global and intergenerational justice. Only with this can one determine what level of protection is required and what it is fair to ask others to do.

A second lesson is that different principles of justice are very likely to propose different answers to the question of what constitutes a *Just Target*. Other things being equal, those who adopt a low sufficientarian threshold, for example, will impose less demanding targets than egalitarian ones that are concerned with inequalities above that threshold.

There is also a third lesson: namely that once we do draw on a particular principle of global and intergenerational justice to help specify the *Just Target*, this same principle also tends to have implications for the question of how burdens should be distributed. As we saw, if we think that everyone should be above a certain minimum standard of living then this implies not just that the target should be set so that this is realized, but also that the distribution of burdens involved in combating climate change should also be determined in such a way that it does not push people beneath this minimum standard of living. It would be incoherent to employ sufficientarianism to specify a just target but to eschew it when allocating burdens. This then lends support to the view expressed at the end of the preceding section: namely, that the answers to the two questions that I identified in Section I might draw (at least in part) on a common normative framework.

III: Question 2 - Two Methodological Issues

With this last point in mind, it is worth turning now from the *Just Target* question to the *Just Burden* question. How should the burdens involved in mitigating and adapting to climate change be distributed? What principles of justice should guide us here? A number of different principles have been proposed. However, before analysing these substantive criteria it is necessary to confront two important methodological issues concerning how to approach the burden-sharing question.

III.1. Integrationism v Isolationism. To introduce the first methodological issue we should recall that to address the first question, it is necessary to consider climate change in conjunction with other important issues (such as eradicating poverty or promoting development or meeting people's health needs). We need to do so, in part, to know what level of protection people are entitled to and, in part, because combating climate change imposes opportunity costs and we need to judge whether those costs impose unfair burdens on others. Answering these questions requires us to draw on a more general theory of justice.

This raises the following question: When applying a distributive principle to the burdens involved in mitigation and adaptation should we include all these other considerations here as well? That is, should we propose a principle in the light of other considerations (such as people's entitlements to food or health or trade)? Or, should we seek to isolate the burdens involved with combating climate change and treat climatic responsibilities (that is responsibilities to mitigate and adapt) in isolation? One can distinguish between three possibilities. Consider first:

Isolationism: This holds that we should apply principles of justice to a good X in isolation of any other considerations.

So this holds that we should bracket out all other normative considerations (such as people's entitlements to food or water or health or rights to develop), and should identify a principle that applies to this topic when considered in isolation from everything else. Isolationism takes a very

radical ‘modular’ approach in the sense that it distinguishes between different domains (like health, or trade or climate) and applies a particular principle to each particular domain.¹¹ As we shall see, a number of philosophers adopt an isolationist approach to the *Just Burden* question.

Isolationism can be contrasted with a second approach, which I term

Moderate Integrationism. This holds that we should apply principles of justice to a good X, but in doing so we should also take into account other considerations.

By contrast with the first approach, this holds that we should factor in other considerations. However, it still holds that there is a specific principle that applies to the case of climate change.¹² On this view it is normally fitting that burdens (and benefits) arising in this context are governed by a particular principle; but, it adds that this principle may be informed, or moderated, by other considerations. Consider an example that is far removed from climate change justice. One might think that the appropriate principle for a speeding offence is something like ‘Those who speed should be punished and the more that they exceed the limit the more severe the punishment’. Now suppose that someone is speeding, we might think that this is the relevant principle; but we might also add that it can be qualified by taking other normative considerations into account. For example, we might take into account whether they had a pressing medical need or if they are being chased by someone seeking to hurt them. There is nonetheless a recognizable principle of justice that applies here and, so to speak, plays the dominant role. It is not that there is a general overarching theory and we just plug it into that.

That leads on nicely to a third possible view, namely

¹¹ I borrow the language of ‘modularity’ from Jerry Fodor’s well-known ‘modular’ account of the mind (Fodor 1983) (though, of course, the analogy is very rough and should not be interpreted literally).

¹² For another example that seems to fit this mould, see David Miller’s treatment of fair trade: (2010).

Strong Integrationism. This holds that we should treat X merely as one element in the total package of burdens and benefits and then this total package should be regulated by a general principle of justice (such as a global difference principle or a commitment to basic rights).

On this view, there is no specific principle that determines the distribution of X considered all on its own (isolationism); nor is it the case that there is a principle that generally governs the distribution of X but which also takes into account other considerations (moderate integrationism). There is just a more general principle that applies to a whole package of benefits and burdens and X is included within this package.

So, when considering how the burdens associated with combating climate change should be distributed we need to consider whether we should adopt an Isolationist, Moderate Integrationist or Strong Integrationist approach. I argued above that settling the *Just Target Question* required us to draw on a more general theory of justice that takes into account both the interests jeopardized by climate change but also the interests that would be impacted if we adopt climate change policies, and which treats all of these interests together. This Strong Integrationism is necessary if we are to arrive at a just target – one that gives a due concern to those affected by climate change but also one that does not make unjust demands on others who are burdened by climate change policies.¹³ And I further argued that the principles invoked to address the *Just Target Question* have implications for the *Just Burden Question*. This has the further implication that when considering the *Just Burden Question* we should draw on a more general theory of justice. In short, we should adopt a version of Strong Integrationism.

This, however, goes against the grain of much contemporary theorizing about how to distribute responsibilities to prevent climatic changes that undermine people's entitlements. So in Section V below we will consider why some defend an Isolationist approach.

¹³ Hereafter my focus will be on the strong, rather than moderate, version of Integrationism.

III.2. Holism v Atomism. Before we do so we should note that also face a second methodological concern. As noted above, combating climate change involves two kinds of burden – those associated with Mitigation and those associated with Adaptation. The question here then is this: Should we treat the burdens from mitigation and the burdens of adaptation together as a package and apply a distributive principle to that? Or, should we should treat them separately and apply different principles to both? On one view, we should adopt the following:

Holism: The distribution of Mitigation responsibilities (and hence emission rights) and the distribution of Adaptation responsibilities should be governed by a common principle of justice (or set of principles of justice).

Some, however, deny this and affirm the following:

Atomism: The distribution of Mitigation responsibilities should be governed by one principle of justice (or set of principles of justice) and the distribution of Adaptation responsibilities should be governed by another principle of justice (or set of principles of justice).

In what follows I shall consider the case for both, and outline why I take a Holist approach to be more compelling.

IV: Holism v Atomism

Let us start with the Holism v. Atomism issue. Although many adopt an atomist approach, few have provided a justification for this. One partial exception is Steve Vanderheiden. On his view, different principles of burden sharing apply to Mitigation and to Adaptation because the question of who should bear the burden of Mitigation is a question of distributive justice, whereas the question of who should bear the burden of Adaptation is a question of corrective justice (Vanderheiden 2008, pp.82, 222-223 & 229-230).¹⁴ Why accept this? Vanderheiden's view

¹⁴ Hyams makes similar assumptions (2009, p.241). See also Risse (2012, pp.202-206, especially p.204).

rests on two further arguments, both of which seek to explain how Mitigation and Adaptation differ in morally relevant ways.

Vanderheiden's first argument runs as follows:

Argument 1: Adaptation Justice: past emissions cause harm and so Adaptation is required to compensate for that harm. Because it is a matter of compensatory justice, the costs involved in providing adaptation should be governed by a backward-looking principle of compensatory or corrective justice to determine who should pay for this harm (Vanderheiden 2008, pp.82, 222-223 & 229-230).

If we turn now from Adaptation to Mitigation we encounter Vanderheiden's second argument.

This runs as follows:

Argument 2: Mitigation Justice: The question of how to distribute the remaining budget of greenhouse gases among current and future emissions is not a question about compensating people for past acts that have caused *climatic harms*. As such, backward-looking considerations and principles of corrective justice are not appropriate here. Rather, what we face here is a question of how best to distribute a particular good, and hence it is governed solely by forward looking principles of distributive justice (Vanderheiden 2008, pp.82, 222-223 & 229-230)

Now on this basis, Vanderheiden then argues, first, that with respect to Adaptation the appropriate principle of *corrective* justice requires that the costs of Adaptation be allocated according to a variant of the Polluter Pays Principle. (I say a variant of the Polluter Pays Principle because he holds that it would be unfair to make people pay for pre-1990 emissions on the grounds that they could be excused for not knowing the harmful effects pre-1990, but that from 1990 onwards any ignorance is inexcusable: Vanderheidehn (2008, p.191).) And he argues, second, that with respect to Mitigation, the appropriate principle of *distributive justice* requires that the right to emit greenhouse gases should be distributed according to broadly egalitarian principles of justice (Vanderheiden 2008, pp.226-227).

Now, if these two arguments were correct then they would establish a morally relevant difference between Adaptation responsibilities and Mitigation responsibilities, and different principles of justice would apply to each. Unfortunately, however, both arguments are incorrect. Consider *Argument 1* first.

First, this argument falsely presupposes that Adaptation is a form of Compensation (and hence should be governed by principles of corrective justice). But this elides the distinction introduced in Section I between Adaptation and Compensation. For Adaptation, as I defined that term, refers to policies that prevent changes in the earth's climate from inflicting harm on others. To give some familiar examples: Adaptation involves building seawalls to prevent rising sealevels from having harmful effects; inoculating people against infectious diseases that they might otherwise acquire were it not for climatic changes. Thus understood, Adaptation is not a matter of compensating people for harm inflicted on them. Rather it – just like Mitigation – is a way of ensuring that one group of people (those currently emitting) does not harm others. There are, then, two ways that people can discharge a duty not to harm others – (i) reducing emissions and/or enabling others to reduce emissions (Mitigation), and (ii) designing social and economic and physical infrastructures such that any climatic changes that occur do not cause harm (Adaptation). The claim that Adaptation is a matter of corrective justice – and hence that it should be governed by a different principle of justice to Mitigation – is, therefore, false.

Consider now the second problem. *Argument 1* presupposes that where some engage in a harmful activity then justice requires that the people who engage in that activity (and only they) should perform duties of corrective justice. It is on this basis that Vanderheiden holds that adaptation funding should be governed by a variant of the Polluter Pays Principle. But why assume that only backward looking principles of justice are relevant for adaptation funding?

To see why one might legitimately ascribe responsibilities to enable Adaptation to people other than those who have emitted high levels of greenhouse gases, consider a familiar liberal egalitarian view like Ronald Dworkin's (Dworkin 2000). This affirms two principles. The first is that persons are entitled to a fair set of opportunities. In Dworkin's view, this mandates equality of resources. The second is that persons can be held accountable for their choices. Thus, if people who enjoy a fair set of opportunities bring misfortune upon themselves (or others) then,

other things being equal, they should bear the burden. Now suppose that someone, X, does engage in harmful behaviour. If we accept the liberal egalitarian view sketched above, it does *not* necessarily follow that X – the polluter - is the agent that should pay. For X may lack a fair set of opportunities, and others may be legitimately required to pay if they have more than their fair share of resources. For example, if a poor Indian who faces unjust circumstances emits high levels of greenhouse gases and thereby contributes to causing harm, then it is not necessarily true that the Indian emitter is the one that should pay for Adaptation. Maybe those who have more than their fair share of opportunities ought to pay. If so, then a non-backward-looking principle is applying to Adaptation – namely the Ability to Pay Principle. My point, then, is that we lack any reason to think that Adaptation funding should be governed *solely* by backward-looking considerations, and not at all by ones that attribute responsibility according to other criteria. *Argument 1* is thus false.

Consider now *Argument 2*. Recall that the claim here is that past emissions have no relevance for the distribution of remaining greenhouse gases (and that they matter solely insofar as they cause climate change). It is on the basis of this assumption that Vanderheiden says that the distribution of those greenhouse gases that may be permissibly emitted is a matter of distributive justice and not corrective justice. However, *Argument 2* is mistaken. As Shue has pointed out in a different context, the emission of greenhouse gases in the past can have two distinct effects. One effect is that noted by Vanderheiden: high greenhouse gases can cause changes in the climate and thus call for Adaptation (Shue 2014, p.196). However, there is a second effect, namely that some past emissions use up a common resource and thereby leave less of this resource to other people (Shue 2014, pp.196-200). The emission of greenhouse gases in the past thus has implications for the fair distribution of greenhouse gas emissions now. So backward-looking considerations *are* relevant to the distribution of mitigation burdens.

One response to this might be that it is unfair on those who emitted greenhouse gases in the past to make them pay twice – once by debiting it from their quota of emissions and then a

second time by charging them adaptation costs.¹⁵ One way to express the worry might be this: suppose that X emits a certain volume of greenhouse gas emissions, v , in the past but then X subsequently pays a sufficient amount of money into an adaptation fund such that any contribution that v makes to bringing about climate change is prevented from being harmful. X can then say:

“the only reason we care about the volume of greenhouse gases that agents emit is to prevent harm but my past emissions v have not led to any harm. Therefore, v should not be debited from my current and future share of emissions. In terms of my contribution to causing dangerous climate change my behaviour (that is, emitting v but then enabling and paying for adaptation to the extent that v results in no harm) is the same as if I have not emitted v at all. Given this, it is unfair to debit v from my share of emissions.”

This objection is, however, misplaced for it treats all past emissions in an undifferentiated way and ignores the possibility that *some* proportion of the past emissions might be relevant for Mitigation and *another* proportion might be relevant for Adaptation. To see this suppose that one maintains that an agent X may permissibly emit up to 100 units in a 10 year period, t_1 - t_{10} . Suppose, then, that in that period X emits 150 units. Suppose now that we are at t_{11} and are wondering how much X can emit in the future. Then it is reasonable to argue that X's emission of 100 units should be taken into account when determining his future emissions. We can say that he used up his full quota and so has no spare left over to use up later on. This bears, then, on his Mitigation responsibilities for if he had emitted less (say 80 units) then he would have some left (20 extra) to use, and thus would have had a less demanding responsibility to mitigate. Turn now to the 50 extra units above his fair share: these should be taken into account when

¹⁵ I am grateful to Christian Baatz who in conversation, and in unpublished work with Konrad Ott, has raised this concern.

ascribing Adaptation responsibilities.¹⁶ In short, in cases like this X's past emissions can justify both some Mitigation and also some Adaptation. Vanderheiden's strong claim that past emissions are not in any way relevant to Mitigation responsibilities is, thus, incorrect, and the objection thus fails.

In conclusion then: we have seen that Adaptation costs should not be governed uniquely by backward-looking considerations like the Polluter Pays Principle, and may legitimately be governed by other considerations like people's Ability to Pay. And, we have seen that Mitigation costs can legitimately take into account backward-looking considerations like people's past pollution (à la Polluter Pays Principle), as well as other egalitarian principles of distributive justice too. Finally, we have seen that a challenge to this second argument has proved unsuccessful.

With this in mind, there is a case for combining the burdens involved in Mitigation and those involved in Adaptation and then allocating them together. In the absence of any reason to treat Mitigation responsibilities and Adaptation responsibilities differently, and given, moreover, the evidence that we have just seen of how backwardlooking and forwardlooking considerations apply to both Mitigation and Adaptation, I shall therefore assume that Holism is correct.¹⁷ This has a major implication for climate justice for it means that we need just to construct a principle (or set of principles) to govern climatic responsibilities, and we do not need to construct two different kinds of account of distributive justice for the different climatic responsibilities.

V: Integrationism v Isolationism

¹⁶ I set aside all complications here concerning levels of knowledge and whether X is an individual or country or another kind of agent (eg corporation). For brief discussion of some of the complications see also section VI, and for fuller discussion see Caney (2005, 2010).

¹⁷ For further discussion of these issues, and challenges to Holism, see Jagers and Duus-Otterström (2008) and Duus-Otterström and Jagers (2012).

Having tackled one important methodological issue that we face when thinking about the fair way to apportion the burdens of climate change, we still face a second. This second one, recall, is whether we should treat climatic responsibilities in isolation from other normative issues (Isolationism) or whether we should consider them in conjunction with other considerations (Integrationism). When determining who should pay for climate change should we factor out considerations like people's other economic rights or entitlements? Or should we include them and adopt a kind of Integrationism? Very many philosophers have adopted an Isolationist approach. How might one ground this? We can distinguish here between principled and pragmatic arguments.

1. Principled Arguments for Isolationism

Consider a principled argument first. One approach might be to draw on a pluralistic theory of justice of the kind defended by Michael Walzer in *Spheres of Justice* (1983). Walzer famously argues that different distributive principles apply to different goods. On his view, the appropriate principle for health is *need*; the appropriate principles for education are *ability and willingness to work*; the appropriate principle for money is the *market*; and so on. Walzer is, of course, not the only advocate of such a pluralistic theory, but his theory is the pre-eminent one and so I focus on his account to illustrate the point.

Now this kind of view might seem hospitable to the Isolationist position on climatic responsibilities. One might, that is, appeal to the idea that different 'goods' should each be distributed according to different distributive criteria to argue that the distribution of climatic burdens should be considered in isolation from other issues and according to its own particular distributive principle. For this strategy to work, however, one would have to establish two claims: first, that a pluralistic theory of the kind described in above is correct, and, second, that such a pluralistic theory entails that it is appropriate to treat climatic burdens in isolation.

Let us suppose, for the sake of argument, that this kind of pluralistic approach is correct. Even if it were, it is unclear that it would support bracketing off the distribution of responsibilities to mitigate and adapt from all other questions of distributive justice. There are

two central obstacles. First, for Walzer the distributive principle for a good – such as health – depends on identifying the shared understanding of the nature of that good: the distribution is governed by what Walzer terms its “social meaning” (1983, p.19). Whether there are shared understandings for the goods that Walzer identifies – like health, political power, membership and so on - is hotly contested (Dworkin 1985), but even if there were for these goods, it is very hard to think of a global set of shared understandings about the nature of the climatic responsibilities. This in part because the kinds of sacrifice required to prevent dangerous climate change are rather heterogeneous – mitigation requires foregoing many different kinds of goods, as does adaptation. In addition to this, unlike the goods that Walzer studies, there is no global consensus about or shared “social meaning” concerning these goods from which one can read off who should mitigate or adapt and by how much.

In addition to this, the Walzerian view depends on there being separate spheres. It can support Isolationism only if the distribution of climatic responsibilities were correlated with one specific “sphere” or “good”. If they were then one could have a single principle that determined the fair distribution of mitigation and adaptation burdens on their own. In reality, however, the kinds of burdens involved in preventing dangerous climate change cross over into many of the different spheres of human life that Walzer discusses. To see this consider one kind of sacrifice that would need to be made – the reduction of greenhouse gas emissions.

In practice, the distribution of greenhouse gases is determined (and in a Walzerian world would be determined) by the way in which many different spheres are organized. Consider, for instance, his examples of “medical care” and “education”. Now Walzer holds that the distribution of medical care should be met according to a principle of need (1983, chapter 3). However, to do so would have considerable implications for the distribution of greenhouse gas emissions. Energy is needed to construct hospitals, and to provide the heating and lighting and machinery to enable them to function. It is also needed to fuel ambulances, transport necessary medicines and so on. So complying with Walzer’s account of just health care would have implications for the distribution of greenhouse gas emissions.

Consider now a second different “sphere” - education. To distribute education in the way that Walzer thinks appropriate (according to ability and interest) would also have

considerable implications for the distribution of greenhouse gas emissions (1983, chapter 8). Distributing education on Walzerian lines requires building schools and universities, heating and providing lighting for them, and providing power for computers and laboratories. It would also require paper, which requires a degree of deforestation, which, in turn, contributes to an increase in greenhouse gas emissions.

One might continue this process further, noting how the distribution of other goods that Walzer analyzes (such as “money”, “political power” and “leisure”) according to their own principles would also have implications for the distribution of greenhouse gas emissions, and indeed other kinds of goods that would be affected by climatic responsibilities. However, reflection on the two examples given above is sufficient to establish the key point: namely, the distribution of greenhouse gas emissions is not governed solely by any one sphere. Note that this problem is further compounded once we take into account other goods, the sacrifice of which is needed to prevent dangerous climate change. The upshot, then, is that one cannot appeal to a Walzerian pluralistic theory of justice to argue that climatic burdens should be distributed according to their own specific distributive principle.

2. Pragmatic Arguments for Isolationism

At this point it is worth noting that some adduce more pragmatic considerations in defence of Isolationism. Some grant that in principle climatic responsibilities should be treated as part of a more general theory of distributive justice. However, they argue that there are pragmatic reasons for treating it in isolation from them. Many argue, for example, that treating climate change in light of a general theory of distributive justice that includes all normative issues will impede progress on reaching any agreement on climate change. Since there is deep and intractable disagreement about the nature of global and intergenerational justice there is a case, this

pragmatic argument runs, for treating climate change in isolation from more general issues (Meyer and Roser 2006, p.239).¹⁸

Three points bear noting here. The first is that the Integrationist might happily respond that their claim is about the nature of justice and that if, in practice, we have to bracket off other issues in order to reach agreement that does not undermine their core claim. It does not show that climate justice is isolationist in character: it just shows that we should act if it were in order to get the best results.

Second: Integrationists might further add that in order to decide to bracket off other issues (like development or rights to procreate) on the grounds that that enables an effective climate agreement that would otherwise not be possible, we need to know whether the contribution to realizing justice that this realizes is worth it. Furthermore, to do this requires taking into account any loss to the realization of justice that pursuing an Isolationist position incurs. For example, if it means that we have to frame a climate treaty in ways that ignore many people's interests in development (and so if more people are prevented from escaping poverty than might otherwise have been the case) then we need to know whether the gain to justice by preventing climate change outweighs the loss to justice from the mitigation policies that thwart development. And this requires a general theory of justice. Put otherwise: the decision to promote preventing climate change over everything else requires an all-things-considered view, and that requires a general theory of justice that integrates climate change, development and all the other phenomena which impact on core interests. We are led back to Strong Integrationism.

My third point returns us to the pragmatic level. Although the argument given above assumes that reaching an agreement on climate change requires – in practice – bracketing out other issues, that assumption needs argument and evidence. It is not self-evidently true and stands in need of empirical support. Indeed there is a widely shared view among negotiation theorists – such as Scott Barrett, Howard Raiffa, and James Sebenius - that isolating an issue can,

¹⁸ For a distinct pragmatic argument see Meyer and Roser (2010, p.233). Gosseries adopts an Isolationist position for both “methodological” and “political” reasons (2005, p.283).

in some circumstances, lead to deadlock, and that making a link to other issues can, in some circumstances, facilitate an agreement that would otherwise be unattainable (Barrett 2003, Chapters 12 & 13; Raiffa 1982, pp.13, 183 & 285-287; Sebenius 1984, pp.192-200). This is also borne out by the negotiations surrounding other environmental problems, such as the treaty on ozone depleting substances, in which agreement was reached when the negotiations included not just CFCs but also finance and technological substitutes (Barrett 2003; Benedick 1998). The point, then, is that one cannot make an *a priori* assumption that isolationism facilitates reaching an agreement (Caney 2012a, pp.278-280).

VI: Question 2 – the Just distribution of Burdens

So far we have considered whether principles of distributive justice should be applied to climatic responsibilities in an atomistic or in holistic way; and we have also considered whether these principles should be treated in isolation from other normative concerns or in an integrated way. We have done so because it is not possible to engage in any substantive analysis about how principles of distributive justice apply to climate change without resolving these issues.

With these methodological enquiries now complete we can now finally consider the *Just Burden Question*. As I noted at the start of this chapter, several principles are commonly defended.

1. One that is commonly adduced is the Polluter Pays Principle (PPP). It is widely recognized that this should play an important role in determining responsibilities. However, a number of problems arise both concerning the application of this principle to the case of climate change and also concerning how much weight to put on this principle in general.

Consider the first kind of problem first. One objection to applying the PPP to climate change is that some of the polluters are no longer alive and so any burden resulting from their emissions needs to be attributed to others. Since people have been emitting greenhouse gases in

large (and increasing) amounts since the industrial revolution, the PPP seems incapable of addressing many of those emissions (the problem of past emitters).¹⁹

One response to this objection is to note that the problem is less acute if we ascribe agency and hence responsibility to groups which persist through time (such as nations or states or firms). Whilst individuals alive now were not, of course, alive during the industrial revolution, many nations and states were and have persisted throughout time. So, one question here concerns the nature of the agent that is said to be subject to principles like the PPP. If we insist on individuals then the objection retains its force. However, if we think that groups can be then we can say that Britain, for example, emitted then and so Britain can pay now.

Consider now a second objection that is often levelled against applying the PPP to climate change. Some will argue that the PPP can apply only to actions that agents perform in situations in which one could reasonably expect those agents to be aware of the harmful nature of their actions. They then argue that some emitters were excusably ignorant of the harmful effects of greenhouse gas emissions; and thus they conclude that the PPP cannot cover all emissions. Some who have emitted greenhouse gases (including some currently alive) should not be held liable for those emissions (the problem of excusable ignorance).

This objection has elicited a number of different kinds of response. One reply is provided by Henry Shue, who argues that whilst it might be unfair to punish the agent for actions which have harmful effects that one could not expect them to have foreseen it does not follow, and it is not true, that they should not bear the burden of those effects (Shue 2014, p.185).

A second response focuses on the concern that imposing a burden on those who are excusably ignorant of causing harm pay is being unfair to them. This does *sound* unfair to the polluter. However, it does so because it focuses exclusively on the burden being imposed and it ignores other considerations (most notably whether they benefit from this harmful activity as well), and it seems questionable to focus solely on the potential burden to the agent that stems

¹⁹ For discussion see (Caney 2005, pp.756-760; Gosseries 2004, pp.41-42).

from their engaging in those actions and to ignore entirely the benefit that they also derived from those very same actions. Suppose that they do indeed benefit from emitting greenhouse gases: then this changes the situation and it might not be unfair to impose at least some costs on them – depending on how well off they are in comparison to how well off they are entitled to be (Caney 2010, pp.208-210; Gosseries 2004, pp.40-41; Shue 2014, p.186).

The objections from past emissions and from excusable ignorance have raised questions about the application of the PPP to the case of climate change. We might, however, also wonder just how much weight we wish to attribute to the PPP itself. If we consider why agents should pay, the underlying idea seems to be that agents should be held responsible for their choices. As such the PPP is drawing on the principle of individual responsibility that liberal egalitarians like Dworkin and Rawls affirm in their theories of distributive justice. This, however, draws attention to an important point about the role of the PPP. For Dworkin and Rawls insist that individuals should be held accountable for their choices within a background scheme of justice (Dworkin 2000, pp. 5–7 & ch.2; Rawls 1999, pp.241-242, 261-262, 284, 369-370). So whilst the idea that agents can be held accountable for their choices is an important one, it is also crucial that they have a fair share of resources and opportunities. This, of course, take us to Integrationism (of a strong kind) because to specify the fair share of resources and opportunities that agents are entitled to requires us to draw on a general theory of justice which affirms their civil liberties, economic rights and so forth.

Suppose, for example, that someone affirms a sufficientarian theory of justice; then they will not hold that the global poor should be held accountable for the emissions that they need to cover their basic needs. They would affirm a principle that applies only to the emission of greenhouse gases that are in excess of the amount required to meet core needs (Caney 2010, p.218). It would seem very implausible to apply a Polluter Pays Principle in an isolationist way, and thereby to ignore the claims of the least advantaged in the world to use electricity, say, to meet their own basic needs. Reflection on the PPP thus brings out the appeal of an Integrationist approach.

2. Consider now a second principle of justice often invoked in discussions of who should pay for the burdens of mitigation and adaptation. Many appeal to an Ability to Pay Principle (Shue 2014, pp.186-189). To evaluate it we need to consider whether the claim would be that it applies to climatic responsibilities considered in isolation from everything else or whether it applies to other burdens too.

Consider the Isolationist variant first. As we saw earlier, we lack good principled or pragmatic considerations for adopting Isolationism. Furthermore, even if we set that aside, it is not clear what reason we would have for thinking both that this is a sound principle *and* also that it would apply just to the burdens of addressing climate change. If there were a case for this principle then why would it be limited simply to the burdens associated with Mitigation and Adaptation, and not to the distribution of burdens and benefits more generally? This point is strengthened further when we actually examine the reasons that might be adduced for endorsing the Ability to Pay principle. Some, for example, might endorse it on utilitarian grounds, arguing that in virtue of diminishing marginal utility, maximizing utility requires imposing the greatest burdens on the most advantaged. Others might defend it on egalitarian grounds, arguing that it brings us closer to a more equal world. What is noticeable here though is that if one accepts either of these rationales then there is no reason to apply the Ability to Pay principle exclusively to climatic responsibilities. Rather they entail applying the Ability to Pay Principle to other burdens too, and considering it in conjunction with other concerns, such as trade and development. Note, moreover, that if this is true and we adopt the Ability to Pay Principle understood in an Integrationist way, then there is no uniquely correct way of distributing climatic responsibilities because who does what on this issue depends on what else they are doing. If one wealthy agent is paying for a great deal of development then they might be required to pay less for climate change than another agent who is equally wealthy but is paying for less development.

3. Thus far we have seen that in the case of both the Polluter Pays Principle and the Ability to Pay Principle, analysing the justifications of, and limits to, these two principles brings out the case for an approach that puts climatic responsibilities into the context of a more general theory of justice. This Integrationist conclusion receives further support if we consider a third principle

of distributive justice that is sometimes mooted. As noted earlier, some argue that climatic responsibilities should be distributed, at least in part, according to whether one has benefited from the activities which cause dangerous climate change (the Beneficiary Pays Principle).²⁰

But what significance should we place on the receipt of benefits from activities that produce greenhouse gas emissions? A number of questions arise.

First, which greenhouse gas emissions should be governed by this principle? It is often invoked to deal with past emissions. So, should it just govern past emissions (Duus-Otterström 2014, p.449)? Or, should it also govern the responsibilities concerning current emissions and future emissions?

Second, and very closely related to this, how does the Beneficiary Pays Principle fit in with other principles? Is there a division of labour according to which the Beneficiary Pays Principle applies to some emissions, but that other principles (such as the Polluter Pays Principle) apply to other emissions? If the answer to this is 'yes', then, what is the argument for the Beneficiary Pays Principle applying to some emissions and for it not applying to others? Or, does a plurality of principles apply to the same emissions?

Both options face problems. The division of labour approach according to which the Beneficiary Pays Principle applies to some emissions but that other principles (like the Polluter Pays Principle) applies to other emissions runs into the following problem: If the fact that A benefits from B's emissions generates responsibilities for A if B is no longer alive then why would it not also generate responsibilities for A if B is still alive? If enjoyment of benefits from emissions is responsibility-generating, then why would this apply to some emissions but not others? That seems puzzling.

But then if we reject the division of labour approach, and we think that responsibility for the emission of some specific greenhouse gases is governed by a plurality of principles, including the Beneficiary Pays Principle among others, we then face the question of how much weight to

²⁰ For discussions see Caney (2005, p.756; 2010, p.215ff), Gosseries (2004), Duus-Otterström (2014), Page (2012).

accord to it and how much to other principles. We also face the methodological question of how we would answer this question: what would be the normative basis for determining how much importance to ascribe to the Beneficiary Pays Principle when compared to other principles?

Suppose that we resolve these problems: we then face another issue. Perhaps the most serious problem with the Beneficiary Pays Principle is that the receipt of benefits is not sufficient to entail responsibilities to contribute to paying for the costs of mitigation and adaptation. To see one reason why this is the case, consider someone who benefits from the emission of greenhouse gases (and let us suppose that she does so voluntarily, even though this will often not be the case). However, suppose that this recipient is well below the standard of living to which she is entitled as a matter of justice (whether that is specified by a sufficientarian standard, a prioritarian one, an egalitarian one or something else). Given that this agent still lacks what she is entitled to as a matter of justice, it would be quite unfair to burden her merely because she has benefited from greenhouse gas emissions and irrespective of her overall rights and entitlements. To illustrate: consider an Indian peasant who lacks access to electricity but who benefits from someone else using excessive electricity. It is true that she has benefited, but since she is beneath what she is entitled to on any plausible account of justice, it would be wrong to infer from her benefiting that she is obligated to bear a burden. This, of course, takes us back to Integrationism: for it shows that we need an account of persons' general rights and responsibilities and that someone having benefited is not sufficient to obligate her if that results in her having less than she is entitled to. Put otherwise: it shows that our focus should be not on what her standard of living is now and how much greater it is than it would be without benefiting. It should be on the standard of living to which she is entitled.

VII: Concluding Remarks

This brings us to the end of the analysis. The above has, hopefully, shed light on two questions that any account of distributive justice and climate change should address, exploring both the

methodological issues raised by these questions and several key substantive proposals. As noted at the start, the fact that there are two questions does not entail that our answers to them should not be cut from the same cloth. And what the arguments above have suggested is that both in defining the just target and also in identifying the just distribution of responsibilities it is necessary to draw on more general theories of global and intergenerational justice. In the case of specifying the target it is hard to see how this could be done without taking into account the claims resulting from other issues and thus appealing to a general theory of justice. And in the case of the distribution of responsibilities we found both that there were no good principled or pragmatic arguments for developing a theory of climate responsibilities in isolation from other issues and considerations. In addition to this, reflection on the standard principles of climate responsibility further brought out the implausibility of any treatment not grounded in a more general theory of justice. To this we should add that any general theory of justice invoked to help answer the *Just Target Question* (for example, one committed to a sufficiency threshold or to equality, say) will also have implications for the just distribution of responsibilities and so the *Just Burden Question*.

There is a further point to be made here, namely the fact that both the target and the ascription of responsibilities are grounded in a more general account of justice enables us to consider the question of how we should negotiate potential trade-offs between them when there is incomplete compliance and it is not possible to realize both. In such circumstances we are faced with the choice of how much to stick to the target that we would select under full compliance (and get some to bear burdens in excess of their fair share) and how much we should stick to the original distribution of responsibilities and burdens (and thus have to adopt a less ambitious target). When faced with this dire choice, it is imperative to have a normative framework for adjudicating between the claims of would-be victims and the claims of the putative duty-bearers, and for striking a fair balance between them. And this is what a Strong Integrationist account can do, because it treats the just target and the just distribution of responsibilities in light of, and as parts of, a single unified theory of justice.

The upshot of all the above, then, is that an adequate treatment of distributive justice and climate change requires us to draw on a general theory of global and intergenerational justice, and we need to have a good understanding of that before we can provide the answers to the questions that this chapter has explored. One can, of course, appeal to mid-level principles that would enjoy support from a variety of different theories of justice, and for practical purposes this is vitally important. In debates in the public forum and international negotiations such mid-level principles can play a central role.²¹ However, it remains the case that for a definitive answer to the questions examined above we need to identify the best account of global and intergenerational justice and start from there.

Bibliography

Masud Ally and Wilfred Beckerman (2014) 'How to Reduce Carbon Emissions Equitably', *World Economics* vol.15 no.1, pp.75-103.

Paul Baer, Tom Athanasiou, Sivan Kartha and Eric Kemp-Benedict (2008) *The Greenhouse Development Rights Framework: The Right to Development in a Climate Constrained World* Revised second edition (Berlin: Heinrich Böll Foundation, Christian Aid, EcoEquity, and the Stockholm Environment Institute). This is available at:

<http://www.ecoequity.org/docs/TheGDRsFramework.pdf>

Scott Barrett (2003) *Environment and Statecraft: The Strategy of Environmental Treaty-Making* (New York: Oxford University Press).

²¹ This raises important questions I set aside here about how the norms that should govern reasoning in the public realm about justice and climate change might legitimately be different from the kind of norms that should govern philosophical analyses of the same subject matter. My focus here is on the second kind of enquiry. For discussion of the first see Caney (2012b).

Richard Elliot Benedick (1998) *Ozone Diplomacy: New Directions in Safeguarding the Planet* (Cambridge Massachusetts and London, England: Harvard University Press) enlarged version.

Luc Bovens (2011) 'A Lockean Defense of Grandfathering Emission Rights' in *The Ethics of Global Climate Change* (Cambridge: Cambridge University Press) edited by Denis G. Arnold, pp.124-144.

John Broome (2012) *Climate Matters: Ethics in a Warming World* (New York and London: W. W. Norton).

Simon Caney (2005) 'Cosmopolitan Justice, Responsibility, and Global Climate Change', *Leiden Journal of International Law* vol.18 no.4, pp.747-775.

Simon Caney (2010) 'Climate Change and the Duties of the Advantaged', *Critical Review of International Social and Political Philosophy* vol.13 no.1 (2010), pp.203-228.

Simon Caney (2012a) 'Just Emissions', *Philosophy & Public Affairs* vol.40 no.4, pp.255-300.

Simon Caney (2012b) 'Addressing Poverty and Climate Change: The Varieties of Social Engagement', *Ethics & International Affairs* vol.26 no.2, pp.191-216.

Simon Caney (2014) 'Climate Change, Intergenerational Equity, and the Social Discount Rate', *Politics, Philosophy & Economics*, vol.13 no.4, pp.320-342.

Matthew A. Cole (2003) 'Environmental Optimists, Environmental Pessimists and the Real State of the World – An Article examining *The Skeptical Environmentalist: Measuring the Real State of the World* by Bjorn Lomborg', *Economic Journal* vol.113 no.448, pp.362-380.

Ronald Dworkin (1985) 'What Justice Isn't' in *A Matter of Principle* (Oxford: Oxford University Press), pp.214-220.

Ronald Dworkin (2000) *Sovereign Virtue: The Theory and Practice of Equality* (Cambridge, Massachusetts: Harvard University Press).

Göran Duus-Otterström (2014) 'The Problem of Past Emissions and Intergenerational Debts', *Critical Review of International Social and Political Philosophy* vol.17 no.4, pp.448-469.

Göran Duus-Otterström and Sverker C. Jagers (2012) 'Identifying Burdens of Coping with Climate Change: A Typology of the Duties of Climate Justice', *Global Environmental Change* vol.22 no.3, pp.746-753.

Jerry A. Fodor (1983) *The Modularity of Mind* (Cambridge, Massachusetts: MIT Press).

Axel Gosseries (2004) 'Historical Emissions and Free-Riding', *Ethical Perspectives* vol.11 no.1, pp.36-60.

Axel Gosseries (2005) 'Cosmopolitan Luck Egalitarianism and the Greenhouse Effect', *Canadian Journal of Philosophy* Supplementary Volume 31 on 'Global Justice, Global Institutions' edited by Daniel Weinstock, pp.279-309.

Clare Heyward (forthcoming) *The Cultural Dimension of Climate Justice* (Cheltenham: Edward Elgar).

Keith Hyams (2009) 'A Just Response to Climate Change: Personal Carbon Allowances and the Normal-Functioning Approach', *Journal of Social Philosophy* vol.40 no.2, pp.237-256.

Sverker C. Jagers and Göran Duus-Otterström (2008) 'Dual Climate Change Responsibility: on Moral Divergences between Mitigation and Adaptation', *Environmental Politics* vol.17 no.4, pp.576-591.

Bjørn Lomborg (2001) *The Skeptical Environmentalist: Measuring the Real State of the World* (Cambridge: Cambridge University Press).

Aubrey Meyer (2000) *Contraction and Convergence: The Global Solution to Climate Change* (Foxhole, Devon: Green Books).

Lukas Meyer and Dominic Roser (2006) 'Distributive Justice and Climate Change: The Allocation of Emission Rights', *Analyse und Kritik* vol.28 no.2, pp.223-249.

Lukas H. Meyer and Dominic Roser (2010) 'Climate Justice and Historical Emissions', *Critical Review of International Social and Political Philosophy*, vol.13 no.1, pp.229-253.

David Miller (2010) 'Fair Trade: What Does it Mean and Why does it Matter?', *CSSJ Working Papers Series*, SJ013. This is available at:
http://www.politics.ox.ac.uk/materials/centres/social-justice/working-papers/SJ013_Miller_Fairtrade.pdf.

Edward A. Page (2012) 'Give it up for Climate Change: A Defence of The Beneficiary Pays Principle', *International Theory*, vol.4 no.2, pp.300-330.

Howard Raiffa (1982) *The Art and Science of Negotiation: How to resolve conflicts and get the best out of Bargaining* (Cambridge Massachusetts, and London, England: Harvard University Press).

John Rawls (1999) *A Theory of Justice* Revised Edition (Oxford: Oxford University Press).

Mathias Risse (2012) *On Global Justice* (Princeton and Oxford: Princeton University Press).

James K. Sebenius (1984) *Negotiating the Law of the Sea* (Cambridge, Massachusetts, and London, England: Harvard University Press).

Samuel Scheffler (2001) *Boundaries and Allegiances: Problems of Justice and Responsibility in Liberal Thought* (New York: Oxford University Press).

Henry Shue (2005) 'War' in *The Oxford Handbook of Practical Ethics* (Oxford: Oxford University Press), edited by Hugh LaFollette, pp.734-761.

Henry Shue (2014) *Climate Justice: Vulnerability and Protection* (Oxford: Oxford University Press).

Steve Vanderheiden (2008) *Atmospheric Justice: A Political Theory of Climate Change* (New York: Oxford University Press).

Michael Walzer (1977) *Just and Unjust Wars: A Moral Argument with Historical Illustrations* (Middlesex: Penguin).

Michael Walzer (1983) *Spheres of Justice: A Defence of Pluralism and Equality* (Oxford: Blackwell).