

## Introduction

Climate change ranks among the most serious problems facing the world today. There is now a strong scientific consensus that emissions of carbon dioxide and other greenhouse gases into the atmosphere have changed, and will continue to change, the world climate, increasing average temperatures more rapidly than has been seen since long before humans existed. The main source of carbon dioxide emissions is the production and consumption of fossil fuels, but there are many other contributing factors associated with industrial activity and agriculture. In addition, land use changes, including the destruction of forests for farmland, have reduced natural sources of carbon dioxide absorption, further increasing the concentration of carbon dioxide in the atmosphere.

The most optimistic forecast is that climate change will be mild and the changes will happen slowly. Even in this case, local variations in the climate will disrupt traditional economic activities such as agriculture, resulting in the wasting of capital investments, significant migration, and so forth. Even if the sea level rises very little, the dangers from storms will increase, and people will need to build seawalls, to move farther from the coast, and to face other burdens and incur other costs. Warm-weather diseases such as malaria will spread, kill many people, and consequently will need to be seriously addressed.

The median forecast is that under business-as-usual scenarios, global temperature changes will be substantial and the effects of climate change will include severe disruption, with millions of otherwise avoidable deaths caused by flooding, disease, and other hazards, and trillions of dollars in costs. As we shall emphasize, the impacts will probably be worst in the most vulnerable places—poor nations like India and countries in Sub-Saharan Africa. There is also a genuine risk of a truly catastrophic outcome—for example, significant

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increases in global temperatures and massive sea level rises that would change human life in terrible ways that are difficult to imagine.

What is to be done? A great deal remains unclear, but a few points are straightforward. First, the governments of the leading contributors, now and in the future, should adopt policies that reduce greenhouse gas emissions. These policies will need to make it more costly for people to burn fossil fuels, clear forests, and engage in other activities that contribute to global warming. Voluntary emission reductions by green-minded citizens are a start but are simply not enough. Ideally, governments would set a tax that equals the harm to the climate that results from the use or consumption of a given product. What this means in practice is a complicated issue to which we will return. There are alternative policies such as a cap-and-trade system, where emissions permits are sold and traded. These alternative measures are probably less effective than a tax, but they may be politically more feasible.

Second, whichever policies are chosen—taxes, cap and trade, or something else—governments around the world (or at least all major contributors to the problem) will need to coordinate these policies, most likely through a treaty. The importance of an international treaty can scarcely be exaggerated. Climate change is a global problem. Global warming results from the erosion of a global commons, the capacity of the atmosphere (and the oceans and forests) to store carbon dioxide and other greenhouse gases. If one nation-state heavily regulates emissions within its territory, but no other state does, then the first state will incur heavy costs while producing few benefits for itself or the world. The reason is that emissions continue as before in other countries; those emissions will continue to cause climate change that harms the first state. Worse, industry may migrate from the first state to other states, where it will continue to emit greenhouse gases as before; this is the problem of “leakage.” And because of variations in the physical location, geographical features, and level of economic development of different states, it makes good sense to concentrate serious abatement measures in some places—those places where abatement measures are cheaper—rather than others, and to compensate the states that bear the brunt of the abatement costs. This step cannot be undertaken unilaterally. A treaty is necessary.

Many governments have already come round to this view. In the 1990s, nations agreed to the United Nations Framework Convention on Climate Change, which provided some general principles to structure negotiations about a climate treaty. These negotiations yielded the Kyoto Protocol in 1997, which went into force in 2005. The Kyoto Protocol had serious, even fatal problems. It imposed no restrictions on developing nations such as China and India, where emissions are increasing dramatically; for this reason, it could not reduce greenhouse gases to tolerable levels. Further, the Kyoto Protocol imposed an extremely severe burden on the United States, which therefore refused to join the treaty regime. At a climate conference in Bali in December 2008, some progress was made on these issues. The United States committed itself to enter some kind of climate treaty, and developing nations seemed somewhat more willing than in the past to acknowledge that they will have to contribute to greenhouse gas reductions as well.

Meanwhile, diplomats, academics, journalists, and various other commentators have tried to develop principles for the design of the climate treaty. The technical difficulties in designing such a treaty are immense. Nations must agree on the acceptable level of greenhouse gas concentrations in the atmosphere despite enormous scientific and economic uncertainties about the future. They will have to agree on abatement measures and methods for monitoring compliance. And they will have to agree on how the burdens of the abatement measures are distributed. This last question may be the most difficult. Invoking arguments about justice, poor states argue that rich states should bear the bulk of the cost of abatement. China, India, and Brazil urge that the United States and the wealthy nations of Europe should have to undertake aggressive emissions reductions, and should also provide significant financial assistance for any emissions reductions in the developing world. Rich states strenuously object, with some arguing that the biggest emitters (including poor states) should have the strictest obligations and others advancing different principles of equity.

Nations not only argue that different principles of justice apply; they perceive the risks from climate change differently. And even when they agree on the principles of justice, they would apply them

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differently. Some poor nations perceive themselves as facing grave risks from climate change, and they want rich nations to act immediately to reduce their emissions. Some rich nations believe that they are not gravely threatened by climate change, and they wonder why they should pay a significant cost to solve what is, for them, a speculative problem in the distant future. Some poor nations believe that climate change is far from the most serious threat that they face; they believe that the real threats are connected with poverty, and that economic growth, reducing poverty but increasing greenhouse gas emissions, is highly desirable. Invoking considerations of fairness, they are deeply skeptical about the idea that they should pay a great deal to reduce their own emissions.

In the debate over climate change, questions of fairness and justice play a crucial role. Commentators argue strenuously that a climate treaty should place greater burdens on rich countries than on poor countries, or should punish countries that have contributed the largest amounts of greenhouse gases, or should place equal burdens on people around the world.<sup>1</sup> We contend that the central arguments about justice encounter serious objections. Taken on their own terms—that is, in terms of ideal theory, ignoring pragmatic considerations—they often confuse means and ends. A climate change treaty is not the only method of redistributing wealth and is unlikely to be the best way. If there are better ways of redistributing wealth, we should not use a climate treaty to do so. There are similar problems with other arguments from ideal theory, such as those focusing on corrective justice and past wrongs.

Moreover, even if the arguments were right on their own terms, they fail to consider basic pragmatic or feasibility constraints. By doing so, they threaten to derail a climate change agreement, thus hurting most the nations and people who are pressing those very arguments. There is a tension between ethical claims and pragmatic constraints. To say that nations will refuse to do what they are ethically required to do is not to excuse the violation of ethical requirements. An ethical argument that ignores the interests of states is a fantasy; but a treaty that simply advances the interests of the most powerful states would not have an ethical basis. The challenge is to balance these considerations

and construct a treaty that is both ethical and feasible. As we shall see, the two are in some tension, but the tension need not be as destructive as it might seem. We aim to show how a treaty might be feasible, and promote the welfare of people all over the world, while also being consistent with the requirements of justice.

Our argument is unusual. We strongly favor a climate change agreement, especially because it would help poor people in poor nations, and we also favor redistribution from the rich to the poor. At the same time, we reject the claim that certain intuitive ideas about justice should play a major role in the design of a climate agreement. More particularly, we develop four central themes.

#### *Looking Forward, Not Backward*

Nations should approach the climate problem from a forward-looking, pragmatic perspective. Many people argue that the climate treaty should reflect principles of corrective and distributive justice. They treat climate negotiations as an opportunity to solve some of the world's most serious problems—the admittedly unfair distribution of wealth across northern and southern countries, the lingering harms of the legacy of colonialism, and so forth. We reject this approach. These arguments run into serious objections of principle. They also threaten to make a climate change agreement far less feasible; any effort to solve all the world's ills, or even some of them, will founder on the diverse values and interests of the various states. Those who make such arguments, including representatives of poor countries but also academics and others in the developed world, are likely in the end to hurt poor countries. If they demand too much from the rich world, the rich world will drag its feet.

#### *Moral Arguments That Make Sense for Individuals Do Not Always Make Sense for States*

Governments and commentators who argue about climate change frequently treat states as though they were independent agents that can cause harm and be harmed, that can be culpable, and that have

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moral obligations to other states. Although this language is an important part of international law and the rhetoric of international relations, it obscures the underlying moral issues. Climate change is a problem because it hurts people, not because it hurts countries. People are often not morally responsible for the harm that results from the policies of states, and care must be taken when moral principles that govern the behavior of individuals—such as principles of corrective and distributive justice—are applied to states.

### *International Paretianism and the Question of Feasibility*

Any treaty must satisfy what we shall call the principle of International Paretianism: all states must believe themselves better off by their lights as a result of the climate treaty.<sup>2</sup> International Paretianism is not an ethical principle but a pragmatic constraint: in the state system, treaties are not possible unless they have the consent of all states, and states only enter treaties that serve their interests. To be sure, states may be influenced by moral arguments, but history supplies very few cases where states act against their own perceived interests in order to satisfy the moral claims of other states. What is true, however, is that states usually define their interests in terms of the well-being of their populations. Thus, the pragmatic constraint of International Paretianism is consistent with a limited but important moral vision—states cooperatively advancing the well-being of their populations, and hence the global population, by agreeing to limits on greenhouse gas emissions. Feasibility rules out the vast redistributions of wealth that many believe are morally required on grounds of corrective and distributive justice, but it does not rule out improvements in global welfare. Feasibility and welfarism are the two pillars of a successful climate treaty.

### *Globally Optimal Emissions Reductions and the Problem of Local Variation*

The optimal climate treaty will provide for a level of greenhouse gas concentrations in the atmosphere that is globally optimal,

considering all the effects, good and bad, of emissions reductions. It will set the level of emissions so that the costs of reducing emissions more closely equal the avoided harm, fully taking into account the unknown risks from emissions. Because of variations in the adverse impact of climate change on different countries, the globally optimal level will be higher than what is optimal for some countries, and lower than what is optimal for other countries. It will be necessary to make side payments to the first group of countries in order to secure their cooperation in abatement programs; the second group of countries might have to pay. We suspect that the allocation of burdens will turn in part on the relative bargaining power of the countries, but we believe that ethical considerations will also play a role. A treaty that satisfies International Paretianism will generate a surplus—the climatic benefits minus the costs of abatement—that can be distributed in the form of credits or monetary payments among countries on the basis of ethical postulates. For example, countries that have most aggressively engaged in abatement measures or invested in abatement technologies ought to be rewarded for their efforts. We also agree that wealthy countries should help poor ones with emissions reductions and adaptation, though our claims on this count are qualified. But even if bargaining power ends up determining the division of the surplus, it is important to see that if states are made better off by a treaty, then so will the people living in those states, and that is ethical reason enough for supporting a climate change treaty.

Chapters 1–3 provide the background for our argument. Chapter 1 discusses the scientific and economic facts that bear on the design of a climate treaty, emphasizing an insufficiently appreciated point: the costs and benefits of emissions reductions vary greatly across nations. We show that some nations and regions are far more vulnerable than others; in particular, poor nations are at grave risk, in a way that bears directly on questions of justice. We also emphasize here that a genuinely global treaty is indispensable. Chapter 2 describes the various policy options that are available and considers whether ethical considerations affect the choice of policy options. Chapter 3 describes the local, national, and international efforts that have so

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far been made and argues that they have been mainly symbolic—no doubt because, however strongly people feel about the problem of climate change, unilateral actions can have little impact on the problem, and so it makes sense to await a treaty rather than put in place expensive but unhelpful regulations.

The core of the book's argument extends from chapter 4 to chapter 7. Chapter 4 criticizes the argument that a climate treaty should reflect the principles of distributive justice—roughly, the view that rich countries should bear the burden of abatement and poor countries either should not have to abate or should be compensated for their abatement efforts. Chapter 5 challenges the argument that the climate treaty should reflect the principles of corrective justice—roughly, the view that countries that industrialized earlier have caused the most harm and should therefore bear the main burden of abatement. Chapter 6 brings these critiques together in order to cast doubt on the popular idea that emissions permits should be distributed on a per capita basis; it also addresses yet another principle—the principle that global resources should be divided equally among the world's inhabitants. Chapter 7 addresses duties to future generations. It insists on a principle of intergenerational neutrality, but offers a qualified endorsement of the view that discounting the future costs and benefits is ethically proper. In chapter 8, we sketch the implications of our arguments for the optimal design of a climate treaty.

At the outset, we should describe some of our ethical and empirical postulates. It is conventional to distinguish between two different approaches to ethical issues: deontological approaches and welfarist approaches. Deontological approaches focus on the rightness or wrongness of particular acts independent of their consequences: for example, certain acts such as lying or harming others are wrong or presumptively wrong, regardless of their consequences. The welfarist approach approves of acts that increase the welfare of relevant people (and possibly animals). For example, an act that increases the welfare of one person without reducing the welfare of anyone else is a good act, and an act that increases the welfare of many people is a very good act.<sup>3</sup>

Our preferred approach to climate change is, as we noted above, broadly welfarist. We find welfarism more congenial and more apt for addressing a phenomenon that is a matter of concern mainly because of its impact on people's well-being. We acknowledge, however, that deontological claims have considerable force, and we shall show that, in many settings, the welfarist and deontological approaches lead to identical conclusions. Finally, we will argue that in certain other settings deontological thinking leads to perverse and intuitively implausible outcomes. It is not, however, our goal to settle the ancient debate between deontologists and welfarists.

A further point is that we will assume, as most welfarists do, certain principles of human equality. We will assume that the welfare of all individuals around the world has equal weight; people in India do not count more or less than people in the United States. We will also assume that people in future generations have equal weight; people born in 2090 do not count more or less than people born in 1990. These assumptions often lead to rather severe prescriptions in favor of the redistribution of wealth: Because poor people would gain more, in welfare terms, from a given unit of money than rich people do, welfarism implies that rich people in rich nations should be transferring a great deal of money to poor people in poor nations. But we also take seriously the state system in which we live, and the practical limits on what ordinary people are willing to sacrifice for the sake of the well-being of others. International Paretianism ensures that we will be discussing only those treaties that have a realistic chance of being ratified.