

*Climate Matters, chapters 4-5*  
by John Broome (2012)

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*Chapter 4*  
Justice and Fairness

Of all the nations in the world, Tuvalu is perhaps the most vulnerable to climate change. It consists of a group of low-lying Pacific islands populated by 11,000 people. The islands' highest point is only 4.5 meters above sea level. Rising sea levels are a serious threat. Already wells are becoming brackish, and pools of water form on the surface of the land when the tide is high. According to some predictions, the islands will become uninhabitable within a few decades. If they do, Tuvaluans will have to abandon their homes and their islands' way of life, and look for a place to live in whatever foreign country is willing to accept them. Yet the Tuvaluans have contributed virtually nothing to climate change. They live very simple lives and use little energy. The threat of homelessness has been visited on them by the people of profligate rich nations far away.

The threat to the Tuvaluans seems a clear case of injustice. So does the threat to the lawsuit described in chapter 1. This chapter examines the basis of that charge. To assess it, we shall first need to explore the idea of justice in general. Two different types of moral duty govern our response to climate change: duties of goodness and duties of justice. We shall see how they are distinguished, and we shall see that justice in particular generally requires us not to harm other people. This is only a general rule that has exceptions, but we shall see that it applies to the harms we cause by emissions of greenhouse gas. Our emissions cause injustice, and the Tuvaluans are among our victims.

The subject of justice raises another question. The best solution to the problem of climate change is for the current generation to make a sacrifice by reducing our emissions. Most of the current political process of climate change is concerned with dividing up this sacrifice among the nations and individual people of the world. How should the division be made fairly; how much should be asked of each person and each nation? Fairness is related to justice, so the question of fair division is a topic for this chapter. It comes up at the end.

GOODNESS VERSUS JUSTICE

We are subject to a number of moral duties. We have a duty to be kind to strangers, to keep our promises, to look after our parents when they are old, not to pollute rivers, and so on. Governments are also subject to moral duties. They should not imprison innocent people; they should protect refugees, support the destitute, and so on. Moral duties can be divided into two broad classes: some are duties of justice and others duties of goodness or—in philosophical terminology—duties of beneficence. The division is not sharp, but the difference is real.

Start with goodness. Morality requires you to try and improve the world, and not make it worse. You should pick up the litter you drop. When you are getting rid of surplus clothing, you should give it to someone who can use it, or take it to a charity shop, rather than throw

it out. An important example is that you should give some of your money to people who are poorer than you. When a richer person gives money to a poorer one, the benefit the recipient receives is greater than the sacrifice the donor makes, because the recipient has more important uses for the money. On balance the world is made better by the donation. For that reason, morality requires it.

Morality also requires governments to make the world better. For instance, it requires them to design their banking regulations and their regulations about carbon emissions with that aim in mind.

Improving the world is not our only moral duty. When an action will improve the world, you are not necessarily morally required to do it. Indeed, sometimes morality does not even permit you to do it. Robin Hood stole from the rich to pay the poor. On balance what he did made the world better, because a transfer of money from rich to poor generally has that effect. But it was nevertheless morally dubious. Possibly it was defensible if the rich were not really entitled to their wealth—if, say, they had become rich by stealing from the poor in the first place. But normally we are not morally permitted to act like Robin Hood. Doing people harm, even for the greater good of others, is not normally permitted. This is part of our common-sense morality. The end does not justify the means, we say.

If you are not convinced, think of this example. A surgeon has five patients who each need an organ in order to survive: one needs a heart, another a liver, a third a kidney, and so on. The surgeon kills an innocent visitor to the hospital and distributes her organs to the five patients, thereby saving five lives at the expense of one. Although a net benefit results, this surgeon's act is plainly not morally permissible.

Governments too are not morally permitted to harm a person for the sake of the greater good. Suppose the government could greatly improve traffic flows by demolishing your home and building a road where it stood. Suppose the benefit to all the city's people would greatly outweigh the harm this would do you. Nevertheless, it would not be morally permissible for the government simply to demolish your home. It is not morally permitted to impose that harm on you for the sake of greater overall good. At the very least, if the government does demolish your home, it should compensate you for the harm it does you.

Evidently, the moral duties that prohibit beneficial actions in these examples are not duties of goodness, because they oppose acting for the greater good. They must come from some other source. They are duties of justice. To steal from the rich, to kill a person, and to demolish someone's house without compensation are all injustices.

Duties of justice plainly differ from duties of goodness. But what, exactly, is the difference? Duties of justice are owed by one person to another particular person, or to other particular people; this is their key identifying characteristic. If you breach a duty of justice, you are doing an injustice, and there is always some particular person to whom it is an injustice. To express the fact that the duty is owed to some person, we often say that the person has a *right* to your performing the duty. The notion of a right goes along with a duty of justice. When you have a duty of justice to do something, someone has a right that you do it. You have a right not to have your house demolished without compensation, and people have a right not to have their property stolen or to be killed.

I am speaking of moral rights, not legal rights. Some moral rights are also legal rights; the right to private property is among them. But some are not. When you make a promise to someone, you give her a right to what you promise, even though it is not usually a legal right. The moral duty to keep your promises is another duty of justice.

Duties of goodness, by contrast, are not owed to people. Suppose that, when you get rid of surplus clothing, you should give it to someone who can use it. That person has no right to your clothing. If you do not give it to her, you do her no injustice. You do not owe it to her to give it to her.

At least, that is how most people think. The anarchist philosopher William Godwin thought differently, and his thinking nicely illustrates the difference between goodness and justice.<sup>1</sup> He thought the duty to promote people's good is owed to the people whose good it is, so he thought the duty to promote goodness actually is a duty of justice. Godwin thought that whoever can make the best use of any object has a right to it. Godwin would have said that Robin Hood did no moral wrong in taking rich people's money and giving it to the poor. The poor had a right to the money in the first place because they could make better use of it.

By contrast, many of the rest of us do make the distinction between duties of goodness and duties of justice, and we think that sometimes a duty of justice conflicts with a duty of goodness. When it does, justice most often wins. Morality does not normally permit you to act unjustly even for the sake of the greater good.

Duties of goodness and duties of justice do not always conflict. In the case of climate change, they generally pull in the same direction. When you cause emissions, they harm other people. This is an injustice done to those people, and it also makes the world worse. So reducing emissions is a duty of justice and also a duty of goodness.

Some writers suggest that the moral issue of climate change is primarily a matter of justice and rights.<sup>2</sup> It is always tempting to bring moral demands under the heading of justice. Justice has a stronger emotional appeal than goodness. We seem to have an atavistic revulsion against injustice. Doing good is less compulsive, so appeals to justice may be rhetorically more effective than appeals to goodness.

We shall see that individuals do indeed have a duty of justice to reduce emissions by their private actions. Governments have this duty of justice too, but for governments their duty to reduce emissions is mainly a duty of goodness. Despite the emotional appeal of justice, you should not be misled into thinking that governments' duty of goodness is less important. The duty to promote good is a very serious moral duty, as justice is. In the case of climate change, the duty of goodness is extraordinarily important. The amount of damage global warming will do is huge. Reducing it is one of our governments' most pressing moral duties.

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<sup>1</sup> William Godwin, *Enquiry Concerning Political Justice*, 1793. There are many modern reprints.

<sup>2</sup> For example, Derek Bell and Simon Caney, *Global Justice and Climate Change* (Oxford: Oxford University Press, forthcoming).

## ARE EMISSIONS AN INJUSTICE?

Emissions of greenhouse gas are normally unjust. They harm people, and to harm a person is generally to do her an injustice. It is not always so; there are many examples of harms that are just. Punishment is one: justice permits us to harm a person, for instance by imprisoning her, if she deserves it. Self-defense is another: justice permits you to harm someone if you do so in order to prevent harm to yourself. Harming someone accidentally is not generally unjust. And so on. But much of the harm done by emissions of greenhouse gas is unjust.

To explain why, I shall not try to specify in general when harming is unjust and when it is not. That would be a lengthy exercise. Instead, I shall describe some of the particular characteristics of the harm done by greenhouse gas emissions, which are enough to make it clear that the emissions are unjust.

Many points are obvious: our emissions are not punishment inflicted on people who deserve punishment, they are done against the will of the people who are harmed, and so on. I shall mention seven points that need more attention.

First, the harm caused by your emissions is the result of something you *do*. We make an intuitive distinction between doing harm and failing to prevent harm. Many harms befall the world's poor because of their poverty. When we (the rich) fail to give the poor more money than we do, we fail to prevent those harms. There are reasons for thinking we ought not to make this omission—we ought to send more aid. But we do not do an injustice to the poor by omitting to send more money, provided we do not ourselves cause the harms that befall them. However, emitting greenhouse gas is not like failing to send more aid. In living our lives, we *act* in ways that cause greenhouse gas to be emitted. We cause carbon dioxide to spew from our chimneys and the exhaust pipes of our cars. Our eating causes cattle to be reared and rice to be grown for us, and those agricultural processes emit methane. And so on. These are all the consequences of things we do, rather than things we omit to do.

Second, the harm we do by our emissions is serious. It may be permissible to inflict trivial harm on other people, but this harm is far from trivial. The greenhouse gas we release today begins immediately to warm the atmosphere around the globe. The warming that is already taking place is already causing harm to people. Cities are already experiencing more severe heat waves, which kill many elderly people. Already farming is becoming harder in drought-stricken areas. The gases we release now will stay in the atmosphere for centuries, and the harm they cause to people will multiply in the future. To give a very rough idea of the scale of the harm, I shall explain in chapter 5 that the annual emissions of a single person living in a rich country shorten people's lives by a few days in total.

Third, the harm we do is not accidental. If it were, it would not be unjust in itself; to harm someone accidentally is not an injustice. But even when you harm someone accidentally, justice generally requires you to make restitution. In effect, justice requires you to cancel out the harm you do, by making sure the victim is no worse off in the end.

Imagine you accidentally knock someone down in the street. You ought to pick her up and see that she is not hurt, even though you are not to blame for the accident. Moreover, this is a duty of justice that you owe particularly to her. You can see that by recognizing that you are more responsible for picking up a person you have accidentally knocked down, than you would be for picking up a person who has been accidentally knocked down by someone else. Your duty of goodness gives you some responsibility for picking up anyone who is knocked down, but you have a special duty of restitution to pick up a person you knocked down yourself. You have a duty to make restitution because you harmed her, even though you did so accidentally. This is a duty of justice owed to her.

This suggests that we owe restitution to those who are harmed by our emissions, on grounds of justice. That would be so even if the harm were accidental. But actually, the harm we cause by emitting greenhouse gas is not accidental. We know that these emissions do harm—at least, governments and most educated people now know that. We do not deliberately do harm by our emissions, but we do harm that is the predicted result of deliberate acts of ours that cause emissions. The harm is not accidental.

That strengthens the duty on us to make restitution. We do not do an injustice to anyone simply by releasing greenhouse gas, since we do not harm them deliberately. But we do an injustice if we release gas that harms people, knowing that this is the predicted result, and we do not compensate those people for the harm we do.

And—fourth point—we actually do not compensate the victims of our harm. Moreover, it would be impossible for us to do so, because we harm huge numbers of people scattered all over the world. It might be possible for nations to compensate one another as nations, but it is not possible for an individual to compensate all the people she herself harms. In any case, nations do not compensate one another, even if they could.

A fifth characteristic of your greenhouse gas emissions is that you normally make them for your own benefit. Most of us emit more than the minimum we could, and we take for ourselves the benefit of doing so. We benefit from the comfort of our homes, the traveling we do, the consumer goods we buy, and so on.

You may be different from most of us. You may be an exceptionally altruistic person, who acts for the sake of others. For example, you may send all your spare money to support the world's poor. You may have decided to buy your electricity from the national grid (where it is made from fossil fuel), rather than generate it yourself with a windmill, in order to save money to give away. If you are that sort of a person, your emissions are not so clearly unjust as the emissions of more typical people. I shall mention you again in chapter 5. Here I assume that you are more typical, and that you yourself benefit from your emissions.

I said that justice normally prohibits you from harming other people even in order to make the world better. It more strongly prohibits you from harming other people in order to benefit yourself. The fact that you emit greenhouse gas for your own benefit suggests particularly strongly that the harm you do is an injustice.

It is important to understand that an unjust act remains unjust even if its benefits exceed its costs. If the benefit you get from a particular emission of greenhouse gas is greater than

the harm the emission imposes on others, it is still an injustice. However, the fact is that the benefit to you of your emissions is often much less than the harm they do. This will appear in chapter 5. Justice normally prohibits you from harming people even for the sake of greater overall benefit. It much more strongly prohibits you from harming people for the sake of a lesser benefit.

Sixth, the harms done by the emissions of the rich are not fully reciprocated. Many environmental harms are reciprocal. Traffic congestion is an example. If you drive to work, the presence of your car on the roads impedes other people on their way to work. They equally impede you. Each one of you is significantly harming others by delaying them. But the harm is reciprocal, so we could not plausibly say that each of you is doing an injustice to others.

Suppose, on the other hand, that you are a police officer on the way to work and, simply in order to save yourself time, you turn on your siren and force your way through the traffic, causing even more delay to other people. You do those people an injustice. They delay you a little, but they are not plausibly doing an injustice to you because the harm they do you is more than fully reciprocated.

Rich people are like the police officer. They inflict harm on the poor, but only a small part of this harm is reciprocated by the emissions of the poor. So the rich are doing an injustice to the poor, but the small reciprocal harm done by the poor is not plausibly an injustice to the rich. When I say that greenhouse gas emissions are an injustice, I am referring to the emissions of the rich.

A seventh characteristic is that we could easily reduce our emissions. True, there are many people in the world who cannot help releasing the meager quantity of greenhouse gas that they do release. The very poor have to burn fuel to survive. But I doubt that readers of this book are among those people. We have only to turn off lights more assiduously, eat less meat, walk rather than drive more often, and so on. In chapter 5 I shall explain that each of us as an individual could completely halt our emissions at remarkably little cost, by using offsets. Justice does not prohibit you from doing harms you cannot help, though even in that case you often owe restitution. But our greenhouse gas emissions are not in that class. We can avoid making them.

I conclude from all these considerations that, even though emitting greenhouse gas is not necessarily unjust in itself, when rich people emit greenhouse gas without compensating the people who are harmed, they act unjustly. ...

## Chapter 5

# Private Morality

Should you stop flying to distant places on vacation? Should you install a windmill in your garden? If not, should you at least buy your electricity from a green supplier? If you are hoping for answers to questions like these from this book, you are lucky. They are in this chapter. As a moral philosopher, I am surprised to find myself giving definite answers to such practical questions. Moral philosophy generally involves a lot of “on the one hand . . . and on the other . . .” Giving moral instruction is not normally part of the discipline. But in thinking through questions about the private morality of climate change, I found definite answers emerging that seem to me inescapable.

This chapter does not describe all the duties that fall on you as a result of climate change. Fulfilling the duties of justice described in this chapter will alleviate to only a small extent the harms caused by greenhouse gas. Significant progress can be achieved only by governments, because only governments have the power to get all their people to change their behavior. Governments have the moral duty to respond to climate change, and you as a citizen have a duty to do what you can through political action to get your government to fulfill them. Governments’ duties are for later chapters, and those will determine your duties as a citizen. This chapter is about your duties as a private individual, rather than as a citizen.

### YOUR EMISSIONS CAUSE SERIOUS HARM

The private morality of climate change starts by recognizing that your own individual emissions of greenhouse gas do serious harm. You might at first think your own emissions have a negligible effect because they are so minute in comparison to emissions around the world. You would be wrong.

If you live a normal life in a rich country, you cause many tonnes of carbon dioxide to be emitted each year. If you fly from New York to London and back, that single trip will emit more than a tonne. An average person from a rich country born in 1950 will emit around 800 tonnes in a lifetime.<sup>1</sup> You can see the harmfulness of these amounts in various ways. The World Health Organization publishes estimates of the number of deaths and the amount of disease that will be caused by global warming.<sup>2</sup> On the basis of the WHO’s figures, it can be estimated very roughly that your lifetime emissions will wipe out more than six months of healthy human life.<sup>3</sup> Each year, your annual emissions destroy a few days of healthy life in total. These are serious harms.

Or look at it in terms of money. Economists have calculated a money value for the “social cost of carbon,” which is the damage done by a tonne of carbon dioxide dumped into the atmosphere. Their estimates vary greatly. The British government’s report *The Stern*

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<sup>1</sup> Frame, “Personal and intergenerational carbon footprints.”

<sup>2</sup> World Health Organization, *Global Health Risks: Mortality and Burden of Disease Attributable to Selected Major Risks*, 2009. The calculations are adapted from David Frame’s.

<sup>3</sup> I base this figure on estimates in Frame, “Personal and intergenerational carbon footprints.”

*Review* estimates that the figure is between \$25 and \$85 per tonne, depending on how radically the world responds to the need to reduce emissions.<sup>4</sup> These numbers are an attempt to put a money value on the total of all the harms that will be caused by a tonne of carbon dioxide, irrespective of when they occur.

Another authoritative source, *A Question of Balance* by William Nordhaus, gives the much lower figure of \$7.40 per tonne of carbon dioxide.<sup>5</sup> But Nordhaus is in effect measuring something different. His figure gives the amount of money you would need to set aside now in order to pay fully for all the harms when they arise, or compensate the people who are harmed. He supposes that the money is invested at an interest rate of 5.5 percent.<sup>6</sup> Since many of the harms will occur far in the future, there is plenty of time for the money to grow at compound interest; at 5.5 percent it grows 250-fold in a century. Nordhaus confirms that, if he were to adjust his calculation to cut out this element of increase at compound interest, he would reach a figure for the social cost of carbon that is close to Stern's.<sup>7</sup> This degree of agreement suggests that *The Stern Review's* figures may be about right.

On these figures, the monetary value of the harm you do over a lifetime ranges between \$19,000 and \$65,000, or between 65 cents and over \$2 per day for every day you are alive. However you look at it, your emissions do serious harm.

You might not be convinced. Whatever harm you do, it is spread over the whole globe. The harm you do to each particular person is minuscule. If you live in a rich country, your contribution over your lifetime to global warming is half a billionth of a degree.<sup>8</sup> Nobody would ever notice it. So you might think your personal emissions are insignificant.

But a great many minuscule, imperceptible harms add up to a serious harm. If you doubt that, think of the recipients of harm. Each one receives harm from the emissions of billions of people. The amount each receives from each emitter is minuscule and imperceptible. Yet some recipients are already suffering serious harm in total. Some are even being killed by global warming. This shows that adding up vast numbers of minuscule amounts can amount to a serious harm. Similarly, although each emitter harms each recipient only imperceptibly, the amounts add up. The harm each emitter does to all the people together is large.

Still, you might think you cannot be absolutely certain that your emissions do harm. It is true that you cannot be absolutely certain, but it is overwhelmingly likely. There is no significant chance that your emissions do no harm.

Greenhouse gas harms people in multifarious ways. Each of them is chancy to some extent. A particular storm will be harmful only if the water rises above the flood defenses. Each increase in the amount of greenhouse gas in the air slightly increases the quantity of rain, but it will be a matter of chance whether the particular quantity of gas you emit this year

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<sup>4</sup> *The Stern Review*, 304.

<sup>5</sup> Nordhaus, *A Question of Balance*, 196.

<sup>6</sup> *Ibid.*, 178.

<sup>7</sup> *Ibid.*, 186.

<sup>8</sup> Frame, "Ethics and personal carbon footprints."



will be enough to cause a flood on any particular occasion. Your emission increases the likelihood of a flood, but it might not actually cause any particular flood. So it is true that your particular emissions may do no harm in a single event. But during the centuries they are in the air they will have the chance of causing harm on innumerable occasions. It is extraordinarily unlikely that they will do no harm at all. There is no real uncertainty there.

There is a different source of chanciness in the harms you cause. It is sometimes a matter of chance whether a particular act of yours leads to an emission of greenhouse gas. If you decide to fly between London and New York, you will probably occupy a seat that would otherwise have been left empty. The plane would probably have gone anyway, and your weight adds little to its emissions. So there is a good chance that a particular flight of yours makes little difference to total emissions.

However, the airline will adjust its schedules to meet demand. As demand increases, there has to come a point where it puts on an extra flight or sends a larger plane. Just one extra passenger will push it across that boundary. Just by chance, your single decision might have that effect. If so, it leads to a great many tonnes of emissions. So your decision might have little effect, but it might have a very big effect. The figure I gave for your emissions—over a tonne for a round trip between London and New York—is an average. It can happen that one single trip emits little, but on average a trip emits a lot.

There is no such chanciness in the effect of many of your acts. You can be sure that much of what you do causes emissions. When you drive a car powered by fossil fuel, it is certain that carbon dioxide will spew from its exhaust pipe. In any case, even if you are not always sure that what you do causes emissions, this is no reason to doubt that every bit of emission that you do cause is harmful.

You might have a different, fatalistic reason for thinking your emissions do no harm. You might think it is already too late to do anything about climate change: nothing you can do now will prevent a disaster. You may be right. The process of climate change triggers positive feedbacks, which accelerate the process. An example is the melting of snow: warming causes snow to melt, and that in turn contributes to warming, because land that is clear of snow absorbs more heat from the sun. Some feedbacks may accelerate global warming to the point where it cannot be stopped. Triggering one of those would be catastrophic. The most worrying possibility arises from the vast amounts of methane that are trapped in permafrost on land and under the sea around the Arctic. The warming of the atmosphere is already causing some of this methane to escape. Since methane is an extremely powerful greenhouse gas, it causes further warming. There is enough methane there to destroy us all, and it is possible that we have already passed the tipping point for all of it to escape.

If we have indeed passed it, your own emissions make no difference in the long run. There will be catastrophe whether you make them or not. But this should not make you think they are harmless. If we are on track to disaster, your emissions accelerate us along the way. They bring the disaster nearer, and that is harmful. If there is to be a catastrophe, the later the better. So even fatalism does not give you a good reason to doubt that your emissions are harmful.

One more reason for doubt is that climate science is uncertain, in the way in which all of science is uncertain. Scientists recognize that new discoveries in the future may force them to revise even the best-established scientific theories. Nevertheless, some theories, such as quantum mechanics or the theory of relativity, are supported by such strong evidence that there is no real doubt that they are at least close to the truth. The evidence that manmade climate change is in progress is by now overwhelming, and there is overwhelming evidence that it is harmful. The amount of harm that greenhouse gas will do remains uncertain, but there is no significant doubt that it is harmful to some extent.

### YOUR EMISSIONS ARE UNJUST

Moreover, the harm your emissions do is done to people; I explained in chapter 4 that, in the case of your individual emissions, you cannot shelter behind any excuse from the nonidentity effect. Your emissions also meet other conditions I described in chapter 4, which imply that they are unjust. The harm they do results from an action of yours; it is serious; it is not accidental; you do not make restitution (I assume); you act for your own benefit (I assume); it is not fully reciprocated; and you could easily reduce it. This last point is explained in detail in this chapter.

Is this conclusion affected by the minute possibility that your emissions do no harm? We might take either of two different views about this possibility, but they both lead to the same result. One view is that to impose a risk of harm on someone is to do her an injustice. The other is that you do an injustice only if you actually harm someone, but it is morally wrong to act in a way that risks doing an injustice. Either way, you ought not to cause greenhouse gas to be emitted, at least without compensating the people who are harmed, and this duty is derived from justice. This conclusion is particularly compelling because the risk of harm is very great; there is only the tiniest possibility that your emissions harm no one.

So each of us is under a duty of justice not to cause the emission of greenhouse gas without compensating the people who are harmed as a result. Your carbon footprint ought to be zero, unless you make restitution. This is strong advice. But I find I cannot avoid drawing this conclusion. Fortunately, it will turn out to be less onerous than it may at first appear to be.

By what means should you satisfy this requirement? You might try to do it by compensating the people you harm. If you can invest money at 5.5 percent interest, compensation would in principle be remarkably cheap. I quoted William Nordhaus's estimate that the harm done by a tonne of carbon dioxide could be compensated for by \$7.40 if it is invested at 5.5 percent. However, I do not recommend this method of achieving justice, because it will fail. Remember that duties of justice are owed to particular people. Your emissions of greenhouse gas are an injustice done to a large fraction of the world's population. You will not be able to compensate each of them individually.

You might try and make restitution through a collective international scheme of some sort. That way, you will not compensate all the individuals you harm, but you might manage some sort of surrogate compensation, by compensating large populations rather than individuals. Possibly justice may be satisfied by surrogate compensation; this is a matter

for argument. But there remains another problem. You do not know how much compensation you actually owe. None of us knows how much harm we cause by our emissions. We may be able to compute how much gas we emit, but the harm that gas does is very uncertain. I have mentioned some figures for the social cost of carbon, but they are not very reliable.

You would do much better not to make the emissions in the first place; no compensation will then be required. This is possible. True, you could not live in a way that does not cause the emission of any greenhouse gas at all, but you can cancel out your emissions. Virtually anything you buy has been produced using energy from fossil fuels. Even if you use electricity produced from renewable sources such as wind or sunlight, the machinery that produces the electricity will have been built using some fossil fuels. You can certainly reduce your emissions, of course. We all know what steps to take. Do not live wastefully. Be frugal with energy in particular. Switch off lights. Do not waste water. Eat less meat. Eat local food. And so on. Many of these are steps you can take at little or no cost to yourself, and you should certainly take those ones. But your most effective way of reducing your emissions to zero is to cancel or *offset* the emissions that you will still be causing after you have taken those steps. Offsetting is the way you can fulfill your duty of justice. I shall examine offsetting in some detail later in this chapter.

I am not telling you this as a way to solve the problem of climate change. If everyone did it, it would solve the problem, but not everyone can do it. I have already said in chapter 4 that reducing your individual emissions of greenhouse gas is not the most effective way for you to make the world a better place. Your duty to have a zero carbon footprint does not derive from your duty of goodness. You must do it to avoid injustice—simply that.

So far as solving the problem of climate change is concerned, your best route is through political action to induce your government to do what it should. Reducing your carbon footprint to zero may contribute indirectly to that effort. It expresses your own commitment to reducing emissions. You should do it on grounds of justice, but it may also have this beneficial political side effect.

#### COMPLICATIONS CAUSED BY GOVERNMENTS' ACTIONS

Before we come to offsetting, we need to take account of two complications. Each is caused by an interaction between governments' efforts to slow climate change and the actions of individuals.

The first complication affects anyone who lives in the European Union or in any country that imposes a cap on greenhouse gas emissions.<sup>9</sup> Suppose at present you consume electricity bought from a company that generates it partly or wholly from fossil fuels. Now suppose you switch your consumption of electricity to a green source. You might start buying electricity from a company that uses only renewable energy, or cover your roof with solar panels.

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<sup>9</sup> Thanks here to Cameron Hepburn.

If you live in a country where the emissions of the electricity industry are capped, your previous supplier will have permits that allow it to emit greenhouse gas up to a certain quantity. It will not have been wasting its valuable permits, so it will certainly have been emitting up to its limit. It will probably continue emitting to the same limit when it loses your custom. It now produces less electricity, but it will probably continue to use its fossil fuel generators as before, and reduce its production from renewable sources. If it uses no renewable sources, or alternatively if it chooses to reduce its production from fossil fuels rather than from renewable resources, it will find itself holding surplus emission permits. It will sell them to some other company, and that company will use them to increase its emissions. Since the number of emissions permits is not reduced, the quantity of emissions will not be reduced.

As a result, when you free yourself from electricity generated from fossil fuels, I am sorry to say you do not reduce your country's overall emissions of greenhouse gas one whit. You bring no benefit to the climate, in fact. The same applies to other ways of reducing your emissions besides changing your electricity supply. In a country where emissions are capped, the overall quantity of emissions is fixed by the number of permits that have been issued.

When you reduce your emissions, other people's emissions will correspondingly increase. The total remains the same. The only exceptions to this rule are in industries outside the capping scheme. As things stand in the European Union, reducing plane travel reduces emissions, because airlines are not capped.

This is not a criticism of cap and trade. It is the international community's way of reducing emissions overall. If all goes well, caps will progressively be reduced. It is the cap imposed from above that will in due course drive down each industry's emissions. The system happens to have the side effect that individual actions from below will not reduce emissions.

Individual actions may still have an indirect political effect. Switching to a green supplier is a way of indicating conspicuously that you care about reducing emissions. When you and other people make the switch, it may encourage your government to reduce the cap on the electricity industry. Indeed it is built into Australia's proposed cap and trade scheme that, when people switch to green electricity, the cap is automatically reduced by a corresponding amount.<sup>10</sup> So what I say does not apply to the Australian proposal.

However, even though switching to green energy does not reduce overall emissions, one important thing remains true. When you reduce your emissions, you move closer to meeting your duty of justice not to cause emissions yourself. You move closer to justice, even though you do no good.

That may seem paradoxical. Compare two ways you might conduct your life in a country with a cap. In one you generate your own electricity from renewable sources. In the other you buy your electricity from a supplier who generates it from fossil fuels. In the first case,

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<sup>10</sup> Ross Garnaut, *The Garnaut Review 2011: Australia in the Global Response to Climate Change* (Cambridge: Cambridge University Press, 2011), 76.

you are harming no one by your use of electricity. In the second case, you are harming people. That is an injustice. Yet I have just said that in the second case you cause no more greenhouse gas to be emitted. Consequently, you cause no more people to be harmed than in the first case. Am I not speaking paradoxically?

I am not. In the second case you harm people, even though you cause no more people to be harmed. Here is a parallel example, adapted from a story made famous by the moral philosopher Bernard Williams.<sup>11</sup> Jim, travelling in a lawless country, stumbles across a soldier who is about to execute an innocent peasant. The soldier offers to pay Jim a fee if he, Jim, executes the peasant instead. Either way, the peasant will be killed. Should Jim accept the fee and kill the peasant? He should not. If he does, he will kill the peasant, which is to harm him. True, he will cause no more harm to be done since the peasant will anyway be killed. But if he kills the peasant the harm will be done by him, Jim. It is an injustice done by Jim: the injustice consists in harming, not in merely causing more harm to be done. If promoting good was the only thing that mattered, it would not be wrong for Jim to kill the peasant. But because justice also matters, it is wrong.

Similarly, on grounds of justice you should not harm people by emitting greenhouse gas, even though, if you do not make those emissions, the people will still be harmed. You can move closer to justice by taking your electricity supply from green sources. However, you have another way of moving closer to justice, and this way also does some good. It is offsetting. Although it is justice, not goodness, that requires you to avoid emitting greenhouse gas, you should take notice of goodness in choosing your means of satisfying this requirement. I therefore do not recommend switching to green energy in a country (except perhaps Australia in the future) where the energy industry is capped.

The second complication caused by governments' actions is this. In a country that is making a serious effort to slow climate change, emitting greenhouse gas will bear a cost known as a "carbon price." Alternative methods of creating a carbon price are explained in chapter 3. It may be that companies pay a tax to the government for emissions. Alternatively, there may be trading in emission permits, so that companies have to pay a price for permits (or forgo the opportunity to sell permits) when they emit. Either way, if you live in a country with a carbon price, when you buy goods, a part of their price will reflect the emissions that have been made in manufacturing them. Ideally, the carbon price should be equal in value to the harm that emissions do, so that when you buy a product, you pay the full value of the harm that is done in the course of producing it. What difference does this make to your duty of justice?

Does it mean you do no injustice when you cause emissions by buying goods? It does if the carbon price you pay is used to compensate the individual people whom your emissions harm. But that is not likely. Even if your government participates in some scheme to recompense the victims of climate change, it is unlikely that the victims of your own emissions will be properly recompensed. Despite the price you pay, it remains likely that

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<sup>11</sup> Bernard Williams, "A critique of utilitarianism," in *Utilitarianism: For and Against*, by J. J. C. Smart and Bernard Williams (Cambridge: Cambridge University Press, 1973), 77–150.

your emissions will harm people who are not properly compensated. So they remain unjust. You should offset them.

### WHAT IS OFFSETTING?

Offsetting your emissions means ensuring that, for every unit of greenhouse gas you cause to be added to the atmosphere, you also cause a unit to be subtracted from it. If you offset, on balance you add nothing. Offsetting does not remove the very molecules that you emit, but the climate does not care which particular molecules are warming it. If you successfully offset all your emissions, you do no harm by emissions. You therefore do no injustice by them.

It will not be easy to calculate the offset you need. You must make sure you offset: not just the gas that is directly emitted by your own actions, but also the gas that supplied the energy used in making everything you consume. The average emissions in your own country will not be a good guide, because much of what you consume will have been manufactured abroad. It would be safest to overestimate. In any case, this calculation is much simpler than trying to calculate the harm your emissions do, with the aim of compensating people for them. This adds to the reasons for preferring offsetting to compensating.

How do you offset in practice? You may be able to subtract gas from the atmosphere yourself. One way of doing so is to grow some trees. As they grow, trees remove carbon from the atmosphere to build their bodies: they take in carbon dioxide molecules, keep the carbon, and release the oxygen. But you would need to make sure that the trees' carbon is permanently kept out of the atmosphere, and that would be hard to achieve. Eventually your trees will die and decompose, and their carbon will return to the air again. Somehow you will have to ensure your forest will be replanted and replanted again perpetually even after your death. For that reason, effective do-it-yourself offsetting is difficult.

Indeed, actually subtracting carbon from the air is difficult by any means. There is a chemical explanation of why. Oxidizing carbon to produce carbon dioxide releases energy. That is why we do it in the first place; it is our way of getting energy. Turning carbon dioxide back into elemental carbon absorbs the same amount of energy. It would be futile to make energy by oxidizing carbon and then use that same amount of artificial energy to turn the resulting carbon dioxide back into carbon. Returning the carbon to elemental form is sensible only if the energy is drawn from a renewable source that cannot be used in other ways. Trees do this for us: they use energy from the sun that would otherwise be wasted.

There are some artificial means of taking carbon dioxide from the air and storing it, rather than converting it to carbon. It has to be stored in a place from which it cannot escape back into the atmosphere. One option is deep underground in geological formations. At present, methods of doing this are too expensive to be a practical means of offsetting.

Apart from planting trees, presently available practical means are “preventive,” as I shall call them. Instead of taking carbon dioxide out of the atmosphere, they make sure that less gets into the atmosphere in the first place. They prevent gas that would have been emitted from getting emitted.

Plenty of commercial organizations offer to do this for you as an individual. You pay them a fee per tonne of offsetting you ask them to do. They use your money to finance projects that diminish emissions somewhere in the world. Most projects are located in developing countries. Most of them create sources of renewable energy. For instance, they build hydroelectric power stations or wind farms. Other projects promote the efficient use of energy. One example is a project that installs efficient cooking stoves in people's homes in Africa and Asia. Cooking with firewood is an important cause of carbon emissions. Using efficient stoves reduces emissions, and has the added health benefit of making homes less smoky.

Preventive offsetting is genuine offsetting, provided it leads to a real reduction in the global emission of greenhouse gas. If you offset all your emissions by this means, you make sure that your presence in the world causes no greenhouse gas to be added to the atmosphere. You therefore do no harm to anyone through emissions. But we need to recognize that it is difficult to be sure that the reduction in emissions you pay for really happens. You have to compare what happens, given the project you pay for, with what would have happened otherwise. What would have happened otherwise is bound to be a bit indefinite. Suppose a project builds a new biomass power station. Who knows whether, had the power station not been built with offsetting money, the local government would have decided to do it anyway within a few years? This problem of ensuring that the reduction is in addition to what would have happened anyway is known in the carbon business as the problem of "additionality."

It is well illustrated by a program known as REDD (Reducing Emissions from Deforestation and Forest Degradation), which is supported by the UNFCCC as an offset mechanism. It aims to reduce emissions from deforestation in developing countries. Developing countries are to be paid for leaving their forests standing, rather than felling them. Companies can buy a patch of forest as an offset for the amount of carbon that is contained in that patch. But if the offset is to be genuine, the world's total emissions of carbon must be reduced by that amount as a result. The particular patch that is purchased will not be felled, we hope. But how do we know it would have been felled otherwise? And even if it would have been, how do we know that the purchase will not simply cause a different patch of forest to be felled instead? REDD would serve as a convincing offset mechanism only if all forests in a particular country would be felled unless the country is paid not to fell them. For most countries, that is not true.

REDD is a good idea for separate reasons. Standing trees have a value for the world, since they lock up carbon. It is therefore a good idea to pay developing countries not to fell their forests. Moreover, paying for forests is a means of redistributing wealth from rich countries to poorer ones; I explained in chapter 4 that redistribution from rich to poor is generally an improvement. But REDD is dubious as an offset mechanism. You cannot safely ensure that you are not committing an injustice in emitting carbon dioxide by purchasing a patch of forest as an offset. I do not recommend this method of offsetting.

But as a private person, you are not likely to participate in REDD anyway. REDD is supposed to supply offsets to companies and nations. You will be dealing with smaller offsetting companies. There are independent organizations that verify and certify the

projects of these companies, to make sure they are truly “additional.” I think we can rely on their work to an extent. By judicious choice of an offsetting company, by attention to its certification, and perhaps by overbuying offsets to allow a safety margin, you can make yourself reasonably confident that you are making a genuine offset. That way you can save yourself from committing an injustice. You might not be fully confident, and this is perhaps a reason to go further in reducing your own direct emissions than you otherwise would do.

## OBJECTIONS TO OFFSETTING

Nevertheless, some environmentalists object to offsetting. In 2007, the leading environmental organization Greenpeace issued a strong statement opposing it. It said:

The truth is, once you’ve put a tonne of CO<sub>2</sub> into the atmosphere, there’s nothing offsetting can do to stop it changing our climate.<sup>12</sup>

This is disingenuous. True, once you have put a tonne of carbon dioxide molecules into the atmosphere, those molecules will wreak their damage. However, if at the same time you remove the same number of other carbon dioxide molecules, you prevent those ones from wreaking damage. Your overall effect is zero. As far as the climate is concerned, emitting a tonne of carbon dioxide and offsetting it is exactly as good as not emitting it in the first place, providing the offset is genuine.

Does Greenpeace have a sound objection to offsetting? One of its concerns is that not all offsets are genuinely “additional.” I agree this is a real concern, and we have to rely on good certification. Is there a sound objection beyond that? The Greenpeace statement went on to say:

Offsets shift the responsibility for reducing our carbon footprint from Western governments to ordinary people in the developing world.

Greenpeace is evidently concerned that offsets allow people in the rich countries to carry on emitting greenhouse gas as they always have, whereas the world needs to reduce its emissions. What is the truth in that?

The first truth is that offsetting is remarkably cheap. This is one of the reasons I recommend it as a better way to avoid injustice than trying to compensate the people whom your emissions harm. Reputable companies offer offsets at a price of around \$10 per tonne of carbon dioxide. Compare this with *The Stern Review*’s figures of \$25 to \$85 for the value of the harm emissions do. I shall soon explain why the price is so low.

Suppose an average American causes 30 tonnes a year to be emitted. Her annual emission could be offset for a mere \$300. Given this cheap price, we can expect most inhabitants of rich countries to prefer to offset most of their emissions, rather than reduce them much. Earlier, I recommended you to reduce your emissions in obvious and cheap ways, but to

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<sup>12</sup> Statement by Charlie Kronick of Greenpeace, January 17, 2007, available at: <http://www.greenpeace.org.uk/media/press-releases/greenpeace-statement-on-carbon-off-setting>.



offset the rest. If you follow my advice, I do not expect you to change your own activities much. You will behave as Greenpeace predicts.

However, since you will offset your emissions, the net effect of your behavior will be a zero emission. Until you offset, you were emitting gas; now you have reduced global emissions by the whole amount that previously you emitted.

***Could you do better for the climate?*** Not by emitting less and correspondingly offsetting less. If you did that, your net emissions would once again be zero, which is no better for the climate. You could do better by emitting less, and continuing to spend the same on offsets, or by continuing to emit as before and spending more on offsets. In effect, this would make your carbon footprint negative. It would be going beyond your duty of justice to avoid harming people. But since it would make the world a better place, it might potentially be a duty of goodness.

However, making your carbon footprint negative is in competition with all the other ways of improving the world that are available to you. I have already said in chapter 4 that it is not the most effective. If you wish to use your resources to improve the world, you can save a life for a few hundred dollars. You cannot save a life as cheaply as that by carbon offsetting. So far as the climate is concerned, you are not under any duty of goodness to go beyond what justice requires of you. You should reduce your carbon footprint to zero, but no more is required.

Since offsetting does less good than using your money in other ways, should you offset at all? Should you not take the money you would have used for offsetting, and instead send it to a charity that will make better use of it? You should not. If you did, you would be acting unjustly by emitting greenhouse gas that harms people. True, you would be doing more good, but morality does not normally permit you to act unjustly for the sake of doing greater good. There are exceptions to this rule, but yours is not one. Remember that you yourself are the main beneficiary of your unjust act. Your emissions benefit you, and only a small part of your benefit will be canceled out by the money you send to charity.

But what if you are an altruist, and devote all your resources to doing good? That is different. If you do not yourself benefit from your emissions, they are not so clearly unjust. Even if they are unjust, their injustice is plausibly made morally permissible by the much greater good that results from them. An altruist has a good case for not offsetting her emissions.

***Is offsetting morally dubious?*** Greenpeace says that offsetting your emissions is passing on the responsibility for reducing emissions to developing countries. It appears to be suggesting that this is morally dubious. Is it right?

To answer this question, I must start by explaining why offsetting is so cheap. It is because of the very thing that causes the problem of climate change in the first place. Greenhouse gases are an externality. The harm done by emitting them is not borne by the emitter. Consequently, people have been happily emitting greenhouse gas even though they could easily have emitted less just by taking some easy steps. Now that offsetting companies

offer them money to emit less, they can easily accept the offer and take those steps. Because the steps are easy, they will not demand to be paid much for making them.

As yet, very little offsetting is taking place in the world, so easy steps are enough to meet the present demand for offsetting. You can at present fulfill your duty of justice cheaply just because other people are not fulfilling theirs, but if people start to offset more, the price of doing so will rise. If all the people in rich countries were to achieve zero net emissions by offsetting, the price would rise a great deal. It would reach a level where those people would find it beneficial to reduce their direct emissions too, so as to reduce the amount of offsetting they have to do.

In the meantime, most of the offsetting reductions will occur in the developing countries rather than the rich ones. Most offsetting projects are located in those countries for two reasons. One is that it helps ensure they are truly additional. Most rich countries are committed by the Kyoto Protocol and its successors to meet a particular target for emissions. If an offsetting project took place in one of those countries, the country would probably count it as helping to meet its target. It would therefore compensate itself by emitting more in some other way. The second reason is that it is generally cheaper to reduce emissions in developing countries. Many rich countries have already started reducing their emissions, so the cheapest opportunities for reductions in those countries have already been taken up. In addition, labor is cheaper in poorer countries.

As a general rule, it is better for the world if things are done where they can be done most cheaply. That is the way to achieve a result with the least use of resources. But is there something morally wrong with reducing emissions, in particular, where it can be done most cheaply? Doing so may seem reminiscent of certain other activities that raise moral questions. One is disposing of toxic waste. Exporting toxic waste from a rich country to a poor country is morally dubious, even though it may be the cheapest way of disposing of the waste. Indeed, the practice is now banned by the Basel Convention, which came into force in 1992. Greenpeace's statement may be hinting that shifting the burden of reducing emissions from rich countries to poor ones is morally similar to exporting toxic waste.

The objection to exporting toxic waste is that it harms the population of the country that imports it. A fee may be paid by the exporting country to the importing one, but the particular people who receive the fee rarely suffer the harm that comes with it. On the other hand, carbon offsetting does not harm the people of the country that does it. It generally benefits them by giving them employment or in other ways. For instance, installing efficient cooking stoves benefits their health. There is no objection on these grounds.

True, part of the reason offsetting is so cheap is that the people of the countries that do it are far poorer than the people who pay for the offsets. The rich offsetters are taking advantage of the poverty of the poor, therefore. Is that morally wrong? I take it for granted that the world's gross inequality is morally bad. But offsetting carbon emissions transfers wealth from the rich to the poor, so it reduces the inequality a little. I therefore cannot see how the world's inequality can make offsetting morally wrong. Still, it remains true that the rich who use cheap offsets are taking advantage of other people's poverty. This may give them a moral reason to contribute more to relieving poverty.

*Does offsetting delay progress on climate change?* Greenpeace recognizes that, if the world is to get climate change under control, the rich countries will have to cut their emissions. It is concerned that offsetting will allow them to delay doing so. I think this is a genuine worry.

However, it is a worry about governments rather than individuals. I am not recommending offsetting to governments; I am recommending it only to individuals as a way of acting justly. Significant progress on reducing emissions—progress on a scale that makes the world significantly better—is going to have to come from governments. Governments are in one way or another going to have to make their populations emit less greenhouse gas. But governments like to make promises in public, and then privately avoid carrying them out fully and honestly. Offsetting may offer them a useful smokescreen for evading their responsibilities.

Large-scale offsetting is available to governments and large organizations as part of the cap and trade system. An offsetting project can apply to be certified under something called the Clean Development Mechanism (CDM) of the UNFCCC. The certificate asserts that it is genuinely “additional”: it prevents the emission of greenhouse gas that would otherwise have been emitted. Once a project is certified under the CDM, the amount of emission it saves can be sold on the market as a “carbon credit.” A carbon credit has the same effect as an emission permit; its holder is allowed to emit as much greenhouse gas as the offsetting project saves. This creates the opportunity for shenanigans.

For example, there is a plan to include REDD under the CDM. If that happens, it will throw huge quantities of new carbon credits on the market, pushing down the carbon price. Each patch of tropical forest will be salable as a credit. Rich countries, and companies within rich countries, will buy up these credits and so get themselves permission to make new emissions up to the level of the credit. REDD is a good idea in principle, but it will simply lead to extra global emissions unless any new carbon credits it produces are balanced by a corresponding cut in emission permits around the world. The international process being what it is, that may not happen.

This chapter is not about the shenanigans of companies and nations. It is about the morality of individuals. When you as an individual buy carbon offsets, you are trading in the carbon market. But you are trading in a much smaller, informal part of the market. The offsets you buy are not the same as the ones that are bought by nations and corporations. You need not be involved in REDD. Greenpeace may well be right about the manipulation of the large-scale market, but I do not think its objections carry over to the informal market.

I do not think Greenpeace has a correct objection to offsetting by individuals. Private offsetting is a means by which each person can avoid causing harm to others. It allows us each to act justly in this respect.

## SUMMARY

Each of us has a clear duty to emit no greenhouse gas. Emitting greenhouse gas does serious harm to others for our own benefit, and that is morally impermissible. It is an injustice. The duty to emit no greenhouse gas is stringent, but even so it can be satisfied easily and

effectively by offsetting. Offsetting is not morally dubious, as some environmental organizations suggest it is.

Reducing our emissions to zero, whether by offsetting or in other ways, will not go far toward solving the problem of climate change. We should do it on grounds of justice, not because it is a good way to improve the world. To improve the world, we shall have to adopt political means. We shall have to work through our governments, because only governments can take action on the large scale that is required.

The next chapter turns to improving the world, and in doing so it turns from private to public morality. It is about morality on a national and international scale. That is the subject of the rest of this book.