RCP REVISTA DE CIENCIA POLITICA

Why Not a Carbon Tax?

¿Por qué no un impuesto al carbono?

DOI: 10.4067/S0718-090X2024005000115
VOLUMEN 44 / Nº 3 / 2024 / 523-536
ISSN: 0718-090X
Revista de Ciencia Política
cienciapolitica.uc.cl
PONTIFICIA UNIVERSIDAD CATÓLICA DE CHILE

JOHN BROOME
University of Oxford, UK & Australian National University, Australia

ABSTRACT

If the world is to overcome the threat of climate change, a price must be set on carbon. A carbon tax is a means of creating a carbon price, and it is an ideal tax in that, unlike most taxes, it promotes economic efficiency. Yet many countries have no carbon tax. The reason is that there are strong political interests opposed to taxing carbon. I shall argue that these interests need to be appeased by fully compensating anyone who would otherwise be harmed by a carbon tax. This includes the owners and workers in the fossil fuel industries. If a carbon tax is to be successful, it needs to be introduced alongside an appropriate system of compensation. Some of the compensation will need to be paid out of public debt, and this will be feasible for many countries only if they are supported by a new financial institution: a World Climate Bank.

Keywords: greenhouse gas emissions ; Pigovian tax ; efficiency; justice ; social cost of carbon; vested interests; compensation; World Climate Bank

RESUMEN

Si el mundo quiere superar la amenaza del cambio climático, se debe fijar un precio al carbono. Un impuesto al carbono es un medio para crear un precio al carbono y es un impuesto ideal, ya que, a diferencia de la mayoría de los impuestos, promueve la eficiencia económica. Sin embargo, muchos países no tienen un impuesto al carbono. La razón es que existen fuertes intereses políticos opuestos a la imposición del carbono. Argumentaré que estos intereses deben ser apaciguados compensando completamente a cualquier persona que de otro modo se vería perjudicada por un impuesto al carbono. Esto incluye a los propietarios y trabajadores de las industrias de combustibles fósiles. Para que un impuesto al carbono sea exitoso, debe introducirse junto con un sistema adecuado de compensación. Parte de la compensación deberá pagarse con deuda pública, y esto será factible para muchos países solo si son apoyados por una nueva institución financiera: un Banco Mundial del Clima.

Palabras clave: *emisiones de gases de efecto invernadero; impuesto pigouviano; eficiencia; justicia; costo social del carbono; intereses creados; compensación; Banco Climático Mundial*

I. INTRODUCTION

If the world is to overcome the threat of climate change, a price must be set on carbon. A carbon tax is a means of creating a carbon price, and it is an ideal tax in that, unlike most taxes, it promotes economic efficiency. Yet many countries have no carbon tax.

The reason is that there are strong political interests opposed to taxing carbon. I shall argue that these interests need to be appeased by fully compensating anyone who would otherwise be harmed by a carbon tax. If a carbon tax is to be successful, it needs to be introduced alongside an appropriate system of compensation.

I shall argue that each country needs a carbon tax. Moreover, the rate should be the same in each country, so the result will be a global carbon tax.

II. TAXATION, EXTERNALITIES AND INEFFICIENCY

I start with some basic economic theory. The first piece of theory is about taxation in general.

Governments need money to spend on public goods. They also need to support the poor and to redistribute income in other ways. So they need to raise revenue, which they do by taxing. But most taxes available to them are inefficient in the technical sense of Pareto inefficiency.[1] This means that, whenever there is a tax, there could in principle be a reallocation of resources that would be a 'Pareto improvement'. A Pareto improvement is a change that puts at least one person in a position she prefers and no one in a position she disprefers.

Why are most taxes inefficient? It is because they make the price of a good to one person different from the price of the same good to a different person. For instance, an income tax makes the price an employer pays for an employee's labour different from the price the employee receives for her labour. When different people face different prices for the same good, in principle each could be benefited by a sort of arbitrage. Transferring a small amount of the good from one to the other, paid for at an intermediate price, would benefit both of them, whilst leaving everyone else unaffected.

For example, suppose an employee is paid a wage of $50 per hour, out of which she has to pay $10 in tax. Her employer evidently thinks it worth employing her at this wage, or she would not do so. So the employer evidently gets a benefit worth at least $50 from an hour of the employee's work. The employee evidently thinks it worth doing an hour of work for $40, or she would not do it. Now suppose the employee was to do an extra hour of work for the employer,

[1] An idea introduced by Vilfredo Pareto (1906).

and was paid $45 tax free by the employer for doing it. Both the employer and the employee would think this transaction worthwhile. It would put at least one person (actually both people) in a position she prefers, without putting anyone in a position she disprefers.

However, the government prohibits this transaction because it demands that tax is paid. It cannot exempt this one transaction – even though it would be a Pareto improvement – without exempting every other transaction of the sort. And if it did that it would raise no tax. It has to raise tax and the tax leads to Pareto inefficiency.

The second piece of basic economic theory is about externalities. An externality is something good or bad that happens to someone as a result of an activity that the person herself does not participate in. Greenhouse gases cause externalities. Our activities such as heating our houses, driving our cars or buying goods that have been produced using fossil fuel cause greenhouse gas to be emitted. This gas spreads around the world and does external harm to other people in multifarious ways. We do not pay the full cost of these activities, because some of the costs are borne by the people who suffer the external harm.

The second piece of basic economic theory is that externalities normally create Pareto inefficiency. To explain why, for the moment I shall use local air pollution as an example, rather than greenhouse gas. Those who suffer external harm caused by air pollution would find it beneficial to offer some – perhaps small – amount of money to the emitters of pollution, in exchange for their reducing their emissions. Before receiving the offer, emitters will have polluted freely to whatever extent they find profitable, balancing the benefits to them of polluting against the costs to them. The offer changes the balance of costs and benefits by in effect increasing the cost of polluting. It makes it worth their while to pollute less – perhaps only a bit less – and take the money in exchange. So both parties can gain by exchanging money for reducing pollution. In other words: a Pareto improvement is possible. This implies that the initial situation is Pareto inefficient.

Sadly, this piece of basic economic theory does not apply to externalities that span generations. Intergenerational externalities encounter what is known in philosophical circles as 'the nonidentity effect'.[2] Any action taken to reduce an externality makes a difference to people's social lives. For instance, if people are required to reduce their travel, they will mix with a different social group, have babies with different people and perhaps have babies at different times. Consequently, different people will come into existence in the future. That is to say, acting to reduce an externality may change the identities of people who live subsequently.

[2] Described by Gregory Kavka (1982) and made prominent by Derek Parfit (1984).

This means we cannot be sure that an intergenerational externality causes Pareto inefficiency. Suppose a particular sort of gas emitted at one time does external damage, but only to the lives of people who are born some time after its emission. Suppose action were taken to reduce the emission of this gas, so it does less damage than it would have done. Because of the nonidentity effect, the people whose lives would have been damaged by the externality might not come into existence at all. Instead there might be a different population of people enjoying the benefits of the reduced externality. So it might be that no individual person is benefited by reducing the externality. Then reducing the externality would not lead to a Pareto improvement. The original situation would not be Pareto inefficient, despite the externality.

For intergenerational externalities, this piece of basic economic theory has to be revised. We need to replace Pareto efficiency with a weaker sort of efficiency. I call it 'constrained Pareto efficiency' (Broome 2018). So far as future people are concerned, constrained Pareto efficiency focuses on the consumption that is available to them rather than on their preferences. Existing people are constrained by a requirement not to reduce future people's consumption. A constrained Pareto improvement is defined as a change that is a Pareto improvement for existing people, while leaving future people with consumption that is at least as good as before the change. A situation is constrained Pareto efficient if no constrained Pareto improvement is possible.

It can be shown that an intergenerational externality normally creates constrained Pareto inefficiency (Broome 2018). This is true of greenhouse gas. Do not suppose that the inefficiency caused by greenhouse gas is a small matter in comparison to, say, the injustice of climate change. It is a vast waste of the Earth's resources, which does a huge amount of harm to people.

III. PIGOVIAN TAX AS AN IDEAL

A third piece of basic economic theory is that there is a standard solution to the problem of inefficiency caused by an externality. It is to apply something called a 'Pigovian' tax or subsidy – named in honour of the economist A. C. Pigou who described it (Pigou 2018) – to the cause of the externality. A harmful externality requires a Pigovian tax, which should be set at the external cost, which is to say the value of the external harm. People should be charged for emitting greenhouse gas, at a rate that is equal to the gas's external cost. The theory tells us that this will remove the inefficiency. Since greenhouse gas causes constrained Pareto inefficiency, that is the sort of inefficiency that will be removed.

A tax on greenhouse gas is commonly called a 'carbon tax'. Greenhouse gases are thoroughly mixed into the world's atmosphere. Consequently, a particular amount of greenhouse gas will do the same amount of harm wherever it is emitted. The Pigovian tax should therefore be the same everywhere; it should be a global carbon tax.

In practice it is very hard to know exactly what the value of the external harm is. The harmful effects of greenhouse gas are many and varied. To set a correct Pigovian tax, they all need to be reduced to a single monetary value. It is a controversial matter how this should be done. For example, climate change will shorten many people's lives, and it is controversial how lives should be valued in money. Many harms will occur far in the future, and this raises the controversial question of temporal discounting. Moreover, some sorts of harm simply cannot be assigned a monetary value. The suffering of animals is one example.

The US government (EPA 2023) has raised its estimate for the external cost of a tonne of carbon dioxide from $51 to $190. There is good reason to think this is still too low, perhaps much too low. It incorporates a value of human life assessed by an unsatisfactory method, and it ignores values that cannot be reduced to human wellbeing (Broome forthcoming).

An alternative, more practicable means of setting the level of a Pigovian carbon tax is to recognize a carbon budget. The community of climate scientists, represented by the Intergovernmental Panel on Climate Change, claims that no more than a particular quantity of greenhouse gas can be emitted without creating dangerous climate change (IPCC 2021). The reason is the empirical discovery made using models that the final temperature the atmosphere will reach depends only the total amount gas emitted, and hardly at all on the distribution of emissions over time. More exactly, if we set a target for the increase in global temperature, and nominate a probability of exceeding this target as tolerable, there is a particular quantity of gas that can be emitted without causing the probability of exceeding the target temperature to rise above the tolerable level. For instance, there is a carbon budget for a two-thirds probability of keeping the temperature within 1.5 degrees above the pre-industrial level.

Once this carbon budget has been emitted, there must be no more net emissions. This is the moment when net zero must be achieved. The carbon tax can be set at a level that will bring net emissions to a halt just when the carbon budget is exhausted. Implicitly, this provides an indirect assessment of the external harm done by emissions. The carbon tax can be adjusted to this level over time by trial and error: it can be increased steadily until emissions are falling fast enough. Since at present emissions are still rising, it is plain that existing carbon taxes around the world are far too low.

The best way of collecting a carbon tax is to charge it for extracting fossil fuels from the ground. The tax will then be passed on to every commodity produced using fossil fuel, so every consumer will pay the external cost of her consumption. If the tax is imposed globally, this will be enough. But for as long as the tax is not global, each country will need to tax its imports according to the carbon embedded in them.

This will cover the carbon emitted from fossil fuels. There will need to be separate means of taxing other sources of emissions such as agriculture and forestry.

Moreover, equivalent subsidies will need to be paid for negative emissions, which is to say for carbon returned to the ground by carbon storage operations. These subsidies are vital, since negative emissions will form part of any effective strategy for controlling climate change.

The purpose of the Pigovian tax is to alter the behaviour of emitters by giving them an incentive to reduce their emissions. To achieve efficiency this way does not require the revenue from the tax to be disbursed to those who suffer from the emissions. Their behaviour does not need to be altered by incentives. A Pigovian tax is therefore a source of revenue that the government can keep and use to finance its aims, whatever they may be.

Unlike most other taxes, a Pigovian tax does not create inefficiency. Instead, it removes inefficiency. In this respect it is an ideal tax. Revenues have to be raised, and it is an ideal way of raising them. If you were setting up an ideal tax system, a carbon tax would be the first you set up, along with any other Pigovian taxes that were called for. However, it can provide no more than a small part of the revenue a government needs. So there will have to be other taxes too in your ideal system. Sadly, these will create some inefficiency. Even the best tax system causes some inefficiency.

No doubt your ideal system will be progressive as a whole, taking a greater proportion of rich people's income than poor people's. But a carbon tax is regressive at least in rich countries. It takes a smaller proportion of rich people's income, because rich people cause less emissions in proportion to their income (Liddle 2015). The ideal system will have to be made progressive by other taxes.

All this makes it obvious that there should be a carbon tax. Without one, the attack on climate change is reduced to a mishmash of ad hoc subsidies and regulations. The mishmash is unlikely to control climate change adequately, and even if it does, it will do so in a very wasteful manner. People will be required to sacrifice much more than they need to.

An example appears in a report from the UK National Health Service (NHS 2020), which is a major emitter of greenhouse gas. The report explains that the NHS intends to achieve net zero emissions by 2045 and describes how it plans to do so. It does not explain why it has this intention. That needs explaining. It needs to be explained why money paid by the government to the health service should be spent on reducing greenhouse gas emissions.

The report does mention some health benefits that will come to British people as a result of the NHS's achieving net zero. These are mainly the result of improving local air quality, and they are a tiny part of the overall benefit of reducing emissions. This is merely window-dressing for the British public. The main reason for reducing emissions is that greenhouse gases cause climate change, which does harm in many ways to nearly everyone in the world. The report does not try to assess this benefit.

Nor does it assess the cost of the various reductions in emissions that are proposed. The absence of any mention of benefits and costs is particularly strange when the NHS, through the National Institute for Health and Care Excellence, is a world leader in priority setting among different medical treatments. It takes a lot of trouble to compare their benefits against their costs. Yet it makes no attempt to assess the relative priority of medical services as a whole against the benefits of reducing carbon emissions, when it is planning to divert funds initially intended for medical services into reducing emissions.

Instead it has just picked a target of net zero by 2045. Presumably it has taken the UK government's date of 2050 for net zero and decided to do better. This is silly. The world has to achieve net zero. This does not mean that every part of the world has to achieve net zero. Countries and industries where reducing emissions is particularly costly should continue to emit, and have their emissions cancelled by negative emissions elsewhere. There are means of removing carbon from the atmosphere, such as carbon capture and storage and planting trees. For all we know, it might be that the NHS should continue to make some emissions even after net zero is achieved in the UK and the world. For example, most anaesthetic gases are greenhouse gases, and they may be so beneficial that they should continue to be used.

We do not know. Since we have no price set on carbon emissions we cannot know. Instead we have the arbitrary quantitative target of net zero by 2045. For good, efficient policy making, pricing is essential.

William Nordhaus (2008, p. 22) says:

> Whether someone is serious about tackling the global warming problem can be readily gauged by listening to what he or she says about the carbon price. Suppose you hear a public figure who speaks eloquently of the perils of global warming and proposes that the nation should move urgently to slow climate change. Suppose that person proposes regulating the fuel efficiency of cars, or requiring high-efficiency light bulbs, or subsidizing ethanol, or providing research support for solar power – but nowhere does the proposal raise the price of carbon. You should conclude that the proposal is not really serious and does not recognize the central economic message about how to slow climate change. To a first approximation, raising the price of carbon is a necessary and sufficient step for tackling global warming. The rest is at best rhetoric and may actually be harmful in inducing economic inefficiencies.

I do not agree that a carbon price is sufficient for dealing with climate change. I do not put that much faith in the market; it may act too slowly, so we also need regulation – such as a ban on fossil-fuel cars, perhaps – to speed up change. Furthermore, we need long-term planning to decarbonize the economic infrastructure. But I do agree with Nordhaus that a carbon price is to all intents and purposes necessary if climate change is to be controlled.

Nordhaus recognizes that a price can be set on carbon by other means than a tax. For example, there could be a cap-and-trade system. But a carbon tax has the great advantage that it directly raises revenue for the government. So it is an extremely attractive measure to take against climate change. I shall return to alternatives at the end of section IV.

IV. VESTED INTERESTS AND HOW TO OVERCOME THEM

Given the great advantages of a carbon tax, the question is why so many countries do not have one.

The answer is political. Introducing a carbon tax can be against many people's interests. A Pigovian tax overcomes the inefficiency caused by an externality. When there is an intergenerational externality, a constrained Pareto improvement is possible, and once a Pigovian tax is in place a constrained Pareto improvement will no longer be possible. However, this does not mean that imposing a Pigovian tax itself makes a constrained Pareto improvement. Indeed, imposing a carbon tax will directly impose a cost on those in the present generation who cause emissions of greenhouse gas. This generates political opposition.

Among these people are consumers who buy fossil fuels and goods that are made using fossil fuels. These include virtually the entire population of all but the poorest countries. A carbon tax will hurt all these consumers by increasing the price of goods. True, the tax will also benefit them by reducing greenhouse gas emissions and so reducing the external harm they suffer. But for many people in the present generation this benefit will not be great and will not outweigh the cost of the tax.

The less well off will be hit harder than the better off because they spent a greater proportion of their income on fuel and products made using fuel (Liddle 2015). Many of these people will find a carbon tax against their interest. The *gilet jaune* movement in France showed that less well off consumers can be powerful political opponents of a carbon tax. France instituted a small carbon tax in 2014, which was scheduled to increase progressively. But strong protests in 2018 forced the government to freeze the tax at its 2018 level. The protesters were largely working-class people from the country and the suburbs.

Others who cause emissions are producers: the owners of fossil fuel reserves and workers in fossil fuel industries. These have proved to be much more powerful and effective political opponents of a carbon tax, and of other measures aimed at controlling climate change. They have vast resources, which give them the ability to control energy policy through direct access to governments. Australia is a good example. For decades the Australian federal and state governments have been tightly tied into the coal industry, with the result that Australia has become one of the most backward countries in responding to climate

change (Baer 2016). Another example is the resources the fossil fuel industry puts into manipulate public opinion. Between 2003 and 2010, approaching $1 billion per year were spent on opposing science and promoting climate denial (Brulle 2014).

We can conclude that in many countries, a carbon tax will not be introduced unless powerful interests are overcome. The good news is that they can be overcome. It is at least in principle possible to introduce a carbon tax in a way that is not against anyone's interest.[3] A carbon tax considered on its own is against the interest of many people who cause emissions of greenhouse gas. But a carbon tax can be introduced along with a system of transfers that move money from those who benefit from the tax to those who suffer from it. This package of a tax together with transfers can ensure that everyone who would otherwise suffer is fully compensated, and ends up no worse off. More exactly, the tax together with transfers leads to a constrained Pareto improvement, which implies that no one in the present generation is worse off, while future generations enjoy at least as good consumption. This is a theorem (Broome 2018).

How can the compensation be paid in practice? Most consumers could be compensated by a reduction in other taxes such as income tax, combined with a distribution to everyone of a fixed lump sum. The lump sum is needed to reach poorer people who pay little other tax. A benefit of reducing other taxes is that it will reduce the inefficiency these taxes cause.

Producers will require more than this. They will require compensation for the loss of their livelihood or for the drop in the value of their holdings of fossil fuel reserves. Since nearly all use of fossil fuel will have to be ended if the world is to reach net zero emissions, the value of these holdings will fall substantially. So very large amounts of compensation will be required.

However, the compensation will not be as much as the full price that fossil fuel holdings command at present. The market in fossil fuel shares still seems to assume that all reserves of fossil fuel will in due course be used. But known reserves are many times bigger than can be burned without causing disastrous climate change, which will wipe out the economy that gives them value in the first place. So the shares are overvalued (Carbon Tracker 2022). The theorem tells us that owners can be compensated for the loss of the true value of their shares, which is the present discounted value of the income that will flow from them. They cannot be compensated for the full present exaggerated market value. The owners of these shares have made a bad investment and cannot avoid the loss that will follow from their mistake.

It is natural to object to compensating the owners of fossil fuel reserves even for their real loss. Some of them are bad people, who have been telling deliberate

[3] I was brought to recognize this crucial point by Duncan Foley (2009).

lies for decades in order to increase their wealth. Because they have deliberately delayed action on climate change, they are causing great suffering to very many people and will cause much more. They deserve to be punished rather than rewarded with compensation. I do not say it is desirable to compensate these people. I say it is necessary in order to reduce the great harm that climate change is doing. I return to this question in section VI.

What is required for bringing climate change under control is that those who emit greenhouse gas should bear the external cost of doing so. There has to be a carbon price at the correct level. What is required to make this politically possible is that creating the carbon price is not against the interests of those who can prevent it. To achieve these requirements, I propose a carbon tax together with a system of compensation for those who are harmed by the tax.

There might be other ways to achieve what is required. For example, a cap-and-trade system can create a carbon price: the government issues a limited number of tradeable emissions permits, and trade in the permits creates the price. A cap-and-trade system can also contribute to compensation by issuing some organizations with free permits. Indeed, this is one reason cap-and-trade systems are often preferred to an uncompensated carbon tax: opposing interests are bought off with free permits. However, it will not be possible to distribute permits in such a way that no one is harmed. This is because, as I am about to explain, this result can be achieved only by a transfer of resources from future people towards present people. Such a transfer can be made through public borrowing of money, but I do not see how it could be made using emissions permits. I therefore continue to favour a carbon tax with full compensation, so that no one is harmed.

V. THE NEED FOR PUBLIC BORROWING

Where can the money come from to pay compensation? Because the need for compensation is widely recognized, it is very commonly proposed that the revenue raised by a carbon tax should be 'recycled' to pay compensation. But recycling is very unlikely to be enough to compensate everyone in full. Economic theory shows that the revenue raised by a tax is definitely not enough to compensate everyone for paying the tax, if the compensation is to be paid as a lump sum. If the country initially has an extremely inefficient tax system, the revenue might possibly cover full compensation by the means of cutting out inefficient taxes. But this would be only an unlikely piece of luck, and nothing to do with climate change particularly. We must expect that some compensation will in practice have to come from elsewhere, beyond recycling. Where?

The theorem I described tells us that it must be possible to get enough compensation from somewhere, because it tells us everyone can be fully compensated. Compensation is a transfer from the beneficiaries of the carbon tax to those who are harmed by it. The beneficiaries are mainly people who will live in the

future whereas those who are harmed live mainly in the present. So compensation has to be transferred from future people to present people.

How is that possible? In real terms, a transfer from the future to the present can in effect be achieved by reducing transfers from the present to the future. We leave many resources to future people in the form of capital goods that are built by our investment. If we increase our consumption and diminish our investment, we shall leave future people fewer resources for their own consumption. So in real terms consumption is shifted from them to us.

Such a transfer can be accomplished financially by means of public debt. When a government issues public debt, it makes a commitment to repay the debt in the future. It will have to be repaid out of future government revenue. Future people will have to be taxed in order to make the repayment, which will reduce their consumption. So public debt is in effect a commitment to reduce future consumption. The money raised in the present by borrowing can be used to compensate present people for paying the carbon tax. It can be added to the revenue from the carbon tax and make it possible to compensate everyone. For one thing, the owners of fossil fuel can be bought out.

It may be puzzling how public debt can move consumption from the future to the present. You cannot literally borrow from the future. Borrowing and later repaying a debt are always transactions that take place among contemporaries. They work like this. The government borrows from presently-living capitalists. These people would otherwise use their wealth to invest in conventional capital. But when the government borrows a part of it, it diverts the borrowed money from investment to present consumption, by paying it to present consumers in compensation for the carbon tax. In the future, when the government comes to repay the loan, it will raise taxes to do so, thus removing money from future consumers. They will consume less. The repayments will go to those heirs of the present capitalists who are living at that future time. They can be expected to invest rather than consume most of them, so overall future consumption will diminish.

I conclude that responding to climate change calls for a new era of public borrowing. A difficulty is that many governments are fearful of public debt. After the financial crash of 2008, interest rates fell to ludicrously low levels. This was a time when countries could have borrowed almost costlessly to rebuild their economies after the crash, and to invest in controlling climate change. Instead, many governments – particularly in Europe – imposed damaging austerity on their people in order to try and repay the debt that had built up during the crisis.

There is no reason to fear the sort of public debt I have described. Public debt is feared because it imposes a particular sort of burden on future people. But that is the whole point of the public debt I am recommending; it is supposed to burden future people. It is aimed at transferring resources from future people to present people. It should be welcomed as a means of making this transfer.

However, a further problem is that many countries are simply unable to increase their borrowing. They are up against their credit limit. Their economies are not sufficiently secure and stable to borrow more. For some years, Duncan Foley and I have been arguing that we need a new financial institution to overcome this problem (Broome and Foley 2016; 2022). It would be a World Climate Bank built on the model of the World Bank and the International Monetary Fund. These two institutions were created to help finance the world's reconstruction after the Second World War. The World Climate Bank would have the support of the world's most stable economies, and so be able to issue the most secure bonds. It would be able to lend in turn to countries that need to pay compensation to people whose interests are damaged by a carbon tax.

VI. INJUSTICES

I have proposed a carbon tax packaged with a system of compensation, so it is not against anyone's interest. I make this proposal as a means of bringing climate change under control. Its aim is for the good of people, as the best chance I can see of warding off a climate disaster.

This is a moral aim. But goodness is not the only concern of morality, and climate change raises other moral issues besides goodness. Some of them are issues of justice. Climate change is in itself an unjust transaction. The emitters of greenhouse gas harm other people, and they do it for their own benefit. That is unjust. One aim of climate policy should be to correct this injustice.

My proposal does nothing to correct it. Indeed, it perpetuates a major injustice. It rewards the owners of fossil fuel reserves, who have been profiting by selling carbon and creating climate change, sometimes deliberately. Their wealth would be badly hit by a carbon tax, and I propose compensating them for this loss. I have already said this is distasteful, and I now add that it is unjust. But I think we have to tolerate this injustice for the sake of the great good of stopping climate change.

For thirty years now, the international community in the form of the UN Framework Convention on Climate Change has been trying to persuade governments and the public to reduce emissions of greenhouse gas, for the sake of those who suffer and will suffer from climate change. These are principally future generations and the world's presently-living poor. The UNFCCC is making a moral appeal; to a large extent it is an appeal to justice. We who emit do an injustice to those other people who suffer as a result. The UNFCCC correctly tells us that we ought not to do this injustice, in the hope of getting us to stop it. It has failed. After thirty years of effort, emissions are still rising. We are now in desperate straits. It is becoming more and more urgent that we act strongly to control climate change.

The fossil-fuel interests have immense power and can hold the world to ransom. I see no other way of overcoming their opposition than by buying them out. This is a price worth paying, unjust though it is. After thirty years of effort we have failed to control emissions, partly due to the machinations of these bad people. We have to do something different. We cannot fight them; we have to buy them out.

Furthermore, injustice can be mitigated as the proposal is implemented. There are great benefits to be gained by removing the inefficiency caused by greenhouse gas, and we can make sure that the lion's share of the benefits go to the people who most deserve them.

Another moral concern is with the world's egregious inequality and poverty. My proposal is concerned with efficiency and is not intended to alleviate these great ills. They have not principally been caused by climate change, but by the history of European colonialism and of the industrial revolution. Rapid climate change is a more recent phenomenon.

Several things are very wrong with our world. Climate change is one; inequality and poverty another. These ills do not both have to be fixed together. We can make progress on both at the same time, but we should not demand that our solution to climate change is also a solution to inequality and poverty. That would be to saddle it with a burden it cannot discharge. It would prevent us from dealing successfully with climate change.

Still, although climate change is not the principal cause of inequality and poverty, it does exacerbate them. The benefits of emitting greenhouse gas come largely to the rich and the poor largely bear the costs. If we can stop climate change, we shall at least remove this cause of inequality and poverty.

VII. CONCLUSION

We need a carbon tax. Without it we cannot stop climate change. But in many countries political resistance will forbid a carbon tax unless compensation is paid to those whose are harmed by it. So a carbon tax needs to packaged together with a system of compensation. Paying compensation will demand an increase in public debt, which in turn will need to be supported by a World Climate Bank.

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Received: July 21, 2023
Accepted: May 29, 2024

John Broome is emeritus White's Professor of Moral Philosophy at the University of Oxford and Honorary Professor at the Australian National University. He was a Lead Author on the IPCC's Fifth Assessment Report. His books on climate ethics and economics are Counting the Costs of Global Warming (White Horse Press, 1992) and Climate Matters: Ethics in a Warming World (W. W. Norton, 2012). E-mail: john.broome@philosophy.ox.ac.uk