

Introduction¹

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The changes brought about by anthropogenic climate change have already had a huge impact on human society and the Earth itself. With the implementation of the Kyoto protocol in 2005, the guidelines set down in the Bali roadmap in 2007, and forthcoming national and global negotiations concerning the scientific measurement of the causes of climate change as well as an appropriate response, attention has now been focused on the social justice implications of the problem. We need to decide how to distribute the costs of climate change in a way that recognises a host of issues about the fairness, efficiency and effectiveness of different courses of action. The chapters in this collection highlight the importance of social justice issues that relate to climate change as we begin to act on this urgent problem. One of the things that makes these issues so difficult and challenging is that they force us to think about questions of social justice in the past and present, as well as the future. For instance, as several authors discuss, an intuitively plausible view about who pays for climate change is that those whose countries caused the problem in the first place should pay for the costs of adaptation or mitigation. Locating the blame for climate change with currently developed countries, which is many people's first response, is also often entangled with other issues of historical injustice that have been generated by previous interactions between countries.

The response to climate change, whether it involves changes to people's everyday behaviour such as avoiding the use of fossil fuels, or transfers of wealth and resources between rich and poor countries, also has great significance for whether present arrangements within and between countries are just. If the problem of what to do about climate change shows us anything, it is that a workable response requires countries, individuals and corporations to recognise that a range of lifestyles are currently unsustainable, and to limit their rights and sovereignty over resources such as energy and the utilisation of resources held in common, such as the atmosphere. Global problems that require countries to limit their sovereignty or to work together, such as global poverty or the spread of infectious diseases, have existed before. But the decisions that are taken now about the health of the environment, and the societies that are dependent on it, also force us to think about both the near and distant future as these decisions affect not just people living now but future generations as well.

Many of the challenges that come with a response to climate change require an approach that draws on a range of disciplines and branches of knowledge. The chapters in this collection illustrate the value of looking at these issues from different disciplinary perspectives. One illustration of the value of multidisciplinary approach is in the design of carbon trading schemes, which need to take account of the whether outcomes are fair, and also whether the scheme produces the right environmental outcome. Similarly, the feasibility of various adaptation and mitigation measures must be sensitive to the overall cost of such measures and the political challenges that must accompany their implementation. Another indication of the importance of interdisciplinarity can be seen when we think of what new institutions and policies might be possible. The political and environmental challenges of stabilising climate change are immense, requiring new thinking and the design of new institutions. As several of the authors discuss, there are plausible and innovative financial and institutional measures that can be adopted to meet these challenges.

Science, Cost and Responsibility

An essential starting place for any discussion of climate justice is with the science that informs it and its implications for the sort of values, institutions and policies that will be required. Although the

science about anthropogenic climate change² is now presenting compelling evidence about the recent human contribution to climate change, there are nonetheless many variables that will shape debate about the social justice implications of climate change. David Karoly's chapter highlights some of the issues involved in assigning blame and responsibility for the causes of climate change. He notes that assigning blame has broader implications for how we allocate costs across countries, companies and individuals, both for current and past emissions. In particular, Karoly addresses the issue of whether it is possible to assign responsibility for specific regional impacts of climate change to specific agents. He argues that some regional climate changes, 'particularly temperature increases and their associated impacts', can be linked to anthropogenic climate forcing. He argues that it is difficult to link specific climate events like floods or heatwaves to climate forcing. However, the scientific research he cites supports the claim that anthropomorphic climate change increases the likelihood of such events.

One of the reasons that assigning precise blame for local climate related events is difficult is because of the relatively even diffusion of recent and historical greenhouse gases (GHGs) throughout the globe. Karoly writes, 'In other words, the carbon dioxide currently circulating in the atmosphere is distributed fairly evenly across the globe, and consists of molecules emitted both recently and over at least the past hundred years, due to the long lifetime of the gas'. At smaller regional levels there are other factors that affect temperature rises, such as land use and aerosols. But, according to Karoly, 'the attribution of observed global-average temperature increases to increasing concentrations of greenhouse gases means that there must be an associated climate change signal at regional scales, even if this is small and possibly dwarfed by climate variability at these scales'. Nonetheless, Karoly notes that a reasonable measure of a country or company's contribution to the changes of global climate forcing is its share of historical GHG emissions. One reason why this is important is because litigation related to climate change will, in part, depend upon linking impacts to GHG emissions, which in turn has important political and legal ramifications. This is especially true now that litigation around the effects of climate change is being instigated.

Continuing the theme of who is responsible for climate change, Peter Singer's chapter highlights how climate change necessitates a new global ethic. Whereas before globalisation the consequences of people's actions (and their responsibility for them) were identifiably local, our production of GHGs, both now and in the past, has meant that our actions have an impact on people everywhere. Singer discusses some of the principles that might be useful for dividing the burden of climate change, including 'time-slice' and 'historical' principles. He argues that while each of these has its advantages and disadvantages, rather than strictly adhere to one or another, we should adopt a compromise principle. This principle would not be derived from identifying who is to blame, but would be a 'principle of equal per capita shares of the capacity of the atmospheric sink, tied to the current projections of population growth per country for 2050'. Seen in the context of emissions trading, this principle would allow cuts to be made to GHG emissions where they are cheapest to make.

Singer's position does have room for attributions of responsibility as he also argues that compensation is owed to poor countries by rich ones. The reason has to do with the harms that have been done via the process of climate change. In particular, the damage to agriculture on which poor countries overwhelmingly rely, and the increased flood proneness of many areas of poor countries. Importantly, Singer adds the proviso that where poor countries are afflicted with corrupt governments, the compensation should either be given directly to the people, or held in trust until the correct use can be made of the resources.

Another way in which we might approach the issue of who has obligations to pay for climate change is via the notion of who has benefited most from the polluting activity that has caused climate change. So called 'benefit accounts' entail the idea that those who have benefited from, for instance, the 'dirty' industrialisation that has contributed to climate change should foot the bill for adaptation or mitigation measures. While plausible, the approach is also subject to some of the same problems as the historical responsibility thesis in that it is often hard to account for actions that occurred in the past. This is particularly true in the case of historical emissions. My own chapter looks at these and other accounts of who should pay as well

the issue of how we should distribute costs within countries and the likely effect on the poor.

A further dimension to who should pay for the costs of climate change (and why) is discussed by John Quiggin. Quiggin's chapter raises the issue of how our responses to climate change affect inter-generational equity. He argues that this issue is important because at least some of those who incur the costs of climate change mitigation will not be alive when these policies produce their desired effect. On the other hand, the adoption of strong mitigation policies will, if successful, produce significant benefits for people alive in the second half of this century. The main technique by which economists address these issues is via the notion of discounting, which determines the present value of a future flow of income. In the case of climate change, the costs of action and the benefits that they produce are compared between current and future generations. The question that Quiggin addresses is whether members of the current generation have the right to allocate resources in their own favour, which may have a cost for future generations.

Quiggin's argument is that this way of understanding the problem is too simple because different generations are alive at the same time. He argues that discounting of future utility is inconsistent with the standard utilitarian requirement that all people alive should be treated equally. A policy of discounting treats the welfare of later-born members of the current population, as well as those who will be born in the future, as being of less value than the welfare of earlier-born members of the population. Unsurprisingly, perhaps, he notes that this policy preference broadly matches the distribution of political power within the population.

Continuing the discussion of the economic effects of climate change, John Freebairn's chapter addresses the issue of the economic incidence of the different options for reducing GHG emissions on consumers, producers and government, and on different countries. Freebairn argues that a lot has been made of the various policy options for tackling GHG emissions and whether they can achieve reductions in GHG emissions while still being fair to the different groups concerned. Freebairn points out that there are precedents which can guide us in assessing the likely effects of emissions trading

and tax schemes. These are studies of tax incidence, and the experience of the GST reforms introduced in Australia in 2000. Drawing on this evidence, Freebairn argues that the cost of a carbon tax or tradable permits will likely be passed onto the consumer, which has two implications. First, regarding permits, any gifting of permits, such as occurred with the EU scheme, is likely to redistribute national income. Whereas for an emissions tax scheme, where permits are auctioned or a tax imposed, there is a case for redistributing revenue in the form of tax cuts or increased social security payments. Freebairn's assessment of the different options available to countries highlights the likely distribution of income that will result, and the links between different policy options and social justice outcomes. He also notes that for an individual country, going it alone in limiting GHG emissions may involve large costs and small benefits. Thus, without a global framework, actions by individual countries will be more costly.

Justice considerations and, in particular, global justice frameworks are the focus of Robyn Eckersley's chapter. She provides a history of carbon trading as a policy tool in the international arena and focuses on whether the various Australian and international trading schemes are just. Regarding cap and trade schemes, she notes the objection that rich countries and heavy polluters may be able to avoid some forms of costly adaptation by relying on other country's or industry's mitigation success. This might lead to these schemes acting to 'hollow out responsibility', as she puts it. It might also have the unfortunate consequence of giving those with the capacity to pollute license to do so.

Nonetheless, Eckersley argues that if some sort of trading scheme is inevitable, the crucial question is whether they can be made palatable from an environmental justice perspective? Her answer is that they can, provided certain important conditions are met. They must 'satisfy the triple requirements of effectiveness, efficiency and environmental justice' and offer real benefits, or at least no disadvantage to poor countries and groups.

For Australia in particular, Eckersley argues that the fairness of internal carbon trading schemes can be assessed on (1) the fairness of the allocation of domestic permits; (2) the rules and consequences of domestic trade; (3) the linking of domestic trading with

international trading; and (4) the more general distributional consequences of rising energy prices. For example, she is critical of government suggestions to offset the increase in petrol prices with a cent for cent reduction in petrol taxes over the next three years, because it cancels out the 'good' price signals associated with a carbon tax. The same objection can be made about granting free permits to energy intensive industries, as it 'prolongs dependence on fossil fuel and grants a scarcity rent to big carbon polluters'.

Climate Change and Vulnerable Groups

The effect of actual and proposed policies is a crucial issue in any discussion of a response to climate change. Jon Barnett's chapter emphasises that even though countries and peoples may adopt policies that fairly spread the burden of adapting to climate change, there are nonetheless likely to be losses of things that 'are unique and which cannot be replaced, such as life, places, and species'. While not disagreeing with the idea that those who have benefited from past interactions, trade and development should bear the bulk of the costs of adapting to climate change, he highlights how the poor and the vulnerable may still lose out. Barnett does this through a detailed consideration of how vulnerability to climate change is distributed within the population of the Pacific island state of Niue, and how efforts to promote adaptation there may increase inequality.

Barnett documents how the likely climate change will affect the food and health outcomes of contemporary and future people of Niue. Although the incomes of Niuean households are largely invulnerable to climate change because their jobs are not dependent on natural resources in Niue but on the New Zealand government, the migrant community on the island is likely to see its position worsen as a result of already existing inequalities. In short, in the absence of adaptation policies, climate change will likely increase income inequality in Niue along the lines of ethnicity. The case of the migrants on Niue illustrates that if we are not clear who are the most vulnerable, inequalities between ethnic and social groups will be exacerbated. What this should tell us is that the most vulnerable need to be included in our decision-making efforts and be well-informed participants in the process.

Continuing the theme of the effects of climate change, Blashki, Berry and Kidd document how one of the most drastic impacts of climate change is likely to be on people's health, and they focus on some of the challenges and benefits of strengthening primary health care as a response to these health impacts. They note that over 60 000 deaths can be attributed to climate change every year and many other life threatening diseases are likely to get worse as a result of climate change. In addition, some of the other health risks associated with climate change include: increased risk of malnutrition from impaired or failed agriculture; change in the range and seasonality of outbreaks of mosquito borne infections such as Malaria, Dengue Fever or Ross River Virus; and health risks for environmental refugees and the host populations.

Yet climate change itself is not uniform and nor are the health impacts. For example, in Africa, 'water stress is expected to be worsened by climate change, affecting between 75 and 250 million people by 2020'. Asia will be subject to alterations in the normal water cycle partially due to increased global melt, which will impact on the likelihood and spread of water borne disease.

In response to these threats, Blashki et al. argue that primary health care providers are well placed to respond to these health issues. The authors put forward a framework which focuses on adaptation to the health impacts of climate change, public education, community capacity building, advocacy for mitigation, and environmentally sustainable health care.

Cam Walker's chapter focuses on a different group of vulnerable people by documenting how climate change is likely to increase the number of refugees. He argues that without adequate action on climate change there will be a significant number of climate refugees, possibly in the hundreds of millions. Like many others, he argues that it is developed countries such as Australia that must take the lead in responding to this issue. He documents the type of regions and peoples that will most likely produce refugees. For instance, he notes that a one-metre sea level rise would displace three million people in Indonesia. Bangladesh's population of more than 140 million are likely to be affected by a similar rise in sea levels. China and India will also suffer as a result of rising sea levels caused by climate change.

In response to this climate refugee crisis, Walker argues that a country like Australia needs to establish an immigration program with a quota for climate refugees that is additional to our current humanitarian quota. Australia should also act within its region to find countries willing to accept climate refugees.

Policy Implications

Identifying whom climate change will harm has implications for the formation of just and effective policies around climate change. Fritze and Wiseman's chapter sets out to critically assess some of the main justice based theories for action in response to climate change. They are critical of the principle of common but differentiated responsibilities because it does not necessarily recognise that countries whose cumulative emissions might be high, might not now be wealthy. Similarly, 'contraction and convergence' models may exacerbate existing inequalities and may not reflect procedural justice. They identify the latter as a crucial feature of future schemes.

Their task of advancing the policy debate centres on five tasks that should be reflected in equitable climate change policies and strategies in Australia. They argue for a need to engage citizens and communities and especially vulnerable individuals and groups. Importantly, this involves assessing how these vulnerabilities track across different policy areas, linking levels of governments. They highlight these issues through a consideration of the impacts of climate change on global food production and the way in which this will increase global inequalities. From an Australian perspective, multi- and bilateral trade agreements that determine the terms of food exports and imports will in part create the context of our ability to respond to climate change impacts on local food production as well as influencing food prices.

Charlotte Sterrett's chapter provides a development perspective on climate justice. She argues that, in many instances, climate change policy does not properly identify who should pay for climate change and where and how those funds should be spent. In particular, she argues that the World Bank's Climate Investment Funds and their strategy for implementation have serious flaws. For instance, she finds that little has been done to develop participation by less

developed nations in the design of the funds, and criticises the proposal to use loans rather than grants for funding, which is unacceptable to those developing countries that are least responsible for causing climate change. She notes how the principles guiding the fund are unjust and instead proposes an 'international air travel adaptation levy', which would both target those who are contributing to climate change and provide larger sums to direct towards developing countries.

Ben Preston's paper argues that some of the current policy parameters need to be replaced. Preston's argument is that while the standard approach to climate policy focuses on the stabilisation of GHG concentrations in the atmosphere at a safe level, we need to shift focus to broader positive social and environmental outcomes. Four key theses illustrate this point. The first is that socio-economic vulnerability is the key driver of climate risk. The rapid globalisation and increased use of the earth's resources have placed too much pressure on the climate. As a result, climate policy should have a dual function: it should act to reduce GHG emissions and generally produce a good result for the environment, but it should also address the broader social issues that cause climate change. Positive social and environmental outcomes should be at the forefront of climate policy.

One example he gives is the tendency to aggregate tipping points into a single metric, most often a global warming threshold of 2 degrees C above pre-industrial global mean temperature. Preston points out that a simple metric such as this ignores local variability (such as coral reefs) and argues that we need a more nuanced metric that promotes 'holistic management methods that can treat systems in their complexity'.

In addition, Preston argues that much policy avoids proper consideration of downstream consequences. 'In order to recognise such unintended consequences of a policy, a sufficiently comprehensive view of a system must first be in place that includes an appreciation for direct and indirect effects that may eventuate.' He cites the recent US policies on biofuel as a case in point, where farmers switching to corn production (to produce ethanol) have led to increased water use and agricultural run off. Here trying to reduce GHG from petrol has

led to other environmental problems ‘swapping one externality for another’ as he points out.

Preston canvasses several ways in which policy makers might act to ensure that we avoid these types of consequences. He reminds us not to lose sight of the ultimate goal of policy making which is to improve human welfare and that there is no single policy silver bullet.

Notes

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- 2 Henceforth I will use ‘climate change’ as an abbreviation for anthropogenic climate change.

