CHINA'S RESPONSIBILITY FOR CLIMATE CHANGE

Ethics, fairness and environmental policy

Edited by Paul G. Harris

First published in Great Britain in 2011 by

The Policy Press
University of Bristol
Fourth Floor
Beacon House
Queen's Road
Bristol BS8 1QU
UK

t: +44 (0)117 331 4054
f: +44 (0)117 331 4093
tpp-info@bristol.ac.uk
www.policypress.co.uk

North American office:
The Policy Press
c/o International Specialized Books Services
920 NE 58th Avenue, Suite 300
Portland, OR 97213-3786, USA
Tel +1 503 287 3093
Fax +1 503 280 8832
e-mail info@isbs.com

British Library Cataloguing in Publication Data
A catalogue record for this book is available from the British Library.

Library of Congress Cataloging-in-Publication Data
A catalog record for this book has been requested.

ISBN 978 1 84742 812 7 paperback
ISBN 978 1 84742 813 4 hardcover

Cover design by Qube Design Associates, Bristol.
Front cover image kindly supplied by www.alamy.com
Printed and bound in Great Britain by TJ International, Padstow.
The Policy Press uses environmentally responsible print partners.

Contents

ONE

Diplomacy, responsibility and China's climate change policy

Paul G. Harris

Climate change is the most profound environmental problems facing the world. Attempts by governments to address it have been characterised by preoccupation with narrow and short-term perceived national interests rather than the pressing need to mitigate atmospheric pollution and respond aggressively to its impacts. This was amply demonstrated at the 15th Conference of the Parties (COP15) to the United Nations Framework Convention on Climate Change (UNFCCC) held in Copenhagen in December 2009. That conference failed to reach any formal or binding agreement on steps to reduce emissions of greenhouse gases (GHGs) or to deal with the consequences of global warming for societies and ecosystems. The Copenhagen conference revealed a fundamental flaw in the international management of climate change, namely underlying political norms and ethics that place nearly all value and importance in states and their national interests.

A major manifestation of this problem is recurring debate over the historical responsibility of the developed countries for GHG pollution. While developed countries surely deserve most of the blame if we think only in terms of states, this focus on state responsibility fails to account for rising GHG emissions among industrialising countries in the developing world and, importantly, among affluent people in those countries. These changes are manifested profoundly in the case of China, which is seeing explosive growth in its GHG emissions and a rapid expansion in the sizes of its middle and upper classes. Given the misfit between historical national responsibility and current emissions, the predominant emphasis on responsibility of developed countries for climate change will have to be overcome if the world is to take the extraordinary steps necessary to combat the problem aggressively in coming decades.

We can find no greater support for this argument than in the case of China. China is now the largest national source of GHG pollution. This pollution must be limited and eventually reduced if the most catastrophic consequences of climate change are to be avoided or at

least mitigated. Thus, addressing climate change effectively will require China's participation. However, the Chinese government rejects internationally binding limits on its GHG emissions for two very good ethical reasons: the developed countries polluted the atmosphere as they became wealthy, so they ought to reduce their emissions before expecting China to do so; and China is a developing country with millions of poor people, meaning that it should be allowed to raise living standards before being required to limit GHG pollution. Put simply, the Chinese government's perspective is that it need not accept any formal obligation to limit its contribution to climate change, let alone agree to *reduce* its GHG emissions, before the West does so *and* behaves accordingly. In short, China has decided that much of its environmental policy, and its response to climate change in particular, will be subject to what Western countries do first.

China's position is not new. The Chinese government has refused to be bound by commitments to limit the country's pollution of the atmosphere since the start of international negotiations on climate change in the 1980s. President Hu Jintao has reaffirmed that China will not commit to mandatory emissions-reduction targets before the world's wealthy countries take the lead in addressing global climate change. He has also called on affluent countries to pay for emissions limitations in China and other developing countries (Hu, 2009). Alongside these Chinese concerns about justice and historical responsibility is the new reality that China has become the largest national source of pollution causing climate change. Without China's involvement, notably through limitations in its future GHG emissions, international efforts to mitigate global warming substantially are very unlikely to succeed. Indeed, we can almost certainly conclude that they *cannot possibly* succeed without China's robust participation. This conclusion comes against the backdrop of increasing concerns among atmospheric scientists that global warming is happening more quickly than predicted, that climate change will be more severe than anticipated and that the poorest countries and poorest people of the world will experience monumental suffering in coming decades as a consequence (UNEP, 2009).

With the increasingly central role of China very much in mind, this book aims to assess how China's longstanding concerns about international fairness and justice can be squared against the pressing need for an effective international regime and effective domestic policies that limit GHG emissions – including those from China – and that respond efficaciously to the inevitable consequences of climate change. The main objectives of the book are:

- to describe and analyse China's contribution to climate change and its domestic and foreign policy responses to this problem;
- to critically explore China's responsibility for climate change from a variety of perspectives;
- to explore some of the policy scenarios that might mitigate China's contribution to climate change while promoting its own interests, its stated policy goals and the international community's expectations; and
- to address all of these objectives in a single volume, thus making for easy access to a wide spectrum of readers, such as policy makers, experts, activists, university students and concerned members of the public.

This chapter lays a foundation for the chapters that follow. I begin by describing very briefly some of the science and international diplomacy of climate change before summarising some key aspects of Chinese climate policy and providing some possible explanations for that policy. I then summarise selected findings of subsequent chapters.[1]

Climate diplomacy in brief

To put the problem of climate change in perspective, and to show how much climate diplomacy and resulting national policies lag climate science, it is worth bearing in mind that anthropogenic global warming was first theorised in the 19th century. By the 1970s, climate change was receiving serious international attention from scientists, and the First World Climate Conference was held in 1979. The Intergovernmental Panel on Climate Change (IPCC) was created in 1988 as part of governments' efforts to study the problem, and in 1990 the Second World Climate Conference was held. International concern was manifested in the 1992 UNFCCC, the 1997 Kyoto Protocol and myriad subsequent agreements that have been reached during the intergovernmental negotiating process. The upshot is that the problem is far from new, and more importantly that scientists and governments have been very actively engaged in it for over three decades.

The latest science of climate change paints a bleak picture of the future. In its most recent assessment, the IPCC reported that climate change will result in a range of unwanted impacts, such as more widespread and severe droughts and floods, an increasing number of severe weather events, loss of biodiversity and damage to vulnerable ecosystems, and many adverse impacts for human communities, such as water shortages, spread of disease-carrying pests, adverse effects on

fisheries and loss of inhabited areas and farmland to the sea (IPCC, 2007). While the IPCC predicted that many of these adverse impacts would occur much later in the century, more recent science suggests that they will occur much sooner – and in many cases may be happening already – and will likely be more severe than the IPCC has predicted (see, for example, McCarthy, 2009; McMullen and Jabbour, 2009). In short, the IPCC science underlying the international negotiations has been, if anything, too optimistic.

We can take at least three messages away from this evolution of climate science and the political response to it. First, the world has known about the problem for decades, with the dangers to humanity having been widely discussed for about two of those. Second, the science is telling us that the future will likely be bleak for many ecosystems and for many millions (possibly billions) of people in the future. The more we learn about climate change, the more bleak the future appears to be and the more confident we become of that bleakness. The science will always contain uncertainties, but the danger is clear (see Hamilton, 2010). Third, the international politics, diplomacy and domestic policies surrounding climate change are grossly inadequate to the task. The science improves by leaps and bounds, the dangers of climate change become more profound each year, but the diplomacy and national responses to climate change plod along at a diplomatic pace, resulting in agreements and policies that are too little, too late. The 2009 Copenhagen conference was but one of many examples of this: even if fully implemented, the voluntary GHG emissions cuts pledged there will be insufficient to avert dangerous global warming (UNEP, 2010).

As with previous major international conferences on climate change, some people characterised the 2009 Copenhagen conference as an important first step towards serious action. For example, in a joint letter, Danish Prime Minister Lars Lokke Rasmussen and United Nations (UN) Secretary General Ban Ki-moon told heads of state that the 'Copenhagen Accord represents the essential first step in a process leading to a robust international climate change treaty' (Rasmussen and Ban, 2009, p 2), and German Chancellor Angela Merkel described it as a 'step, albeit a small one, towards a global climate change architecture' (quoted in den Egenhofer and Georgiev, 2009, p 1). However, given the science and a quarter-century's international negotiations, we must ask when the world will take the second, third and fourth steps of actually slowing, eventually stopping and ultimately reversing GHG emissions causing global warming, in addition to taking further steps of responding with necessary vigour to the inevitable impacts.

International negotiations surrounding climate change now encompass almost all of the world's governments, and indeed many sub-state and non-state actors. The Copenhagen conference was remarkable for its unprecedented international participation. It involved 192 countries, including 119 heads of state and government, making it almost certainly the largest gathering of state leaders in modern history. What is more, tens of thousands of non-governmental delegates and activists participated in the event (IISD, 2009). From this perspective, the response to climate change has been unprecedented and truly 'global' in scope. This is an important historical development. However, the scale of the failure at Copenhagen was as great as was participation in discussions held there. The result was a relatively feeble statement – the Copenhagen Accord (UNFCCC, 2009) – which repeated some aims discussed at the conference but did not require any governments to comply (and, unusually for such UN meetings, was not endorsed by all delegates), much as the 1992 UNFCC did not require compliance, with predictable results. A growing global catastrophe has emerged from scientific circles to catch the attention of the world's leaders, yet they effectively stand frozen, like deer in an car's headlights, unable or unwilling to move despite knowledge of what is to come. Admittedly, the conference did result in some progress on negotiations for long-term cooperative action, the post-Kyoto Protocol process and other issues, but, as in past conferences, progress comes at a snail's pace even as the Earth grows warmer at an accelerating pace. Copenhagen thus revealed a proportional relationship between participation of leaders in climate change conferences and the lack of success. Part of the problem is the myopic attention that governments of states arrogate to themselves. Arguably, the Chinese government is among the governments of several major countries most guilty of this myopia.

China's growing contributions to climate change

Despite a swelling of expectation around the world that the Copenhagen conference would result in a binding agreement among governments to substantially reduce pollution causing climate change, the outcome was little more than the voluntary Copenhagen Accord and hope that a robust agreement might be achieved in time for the 16th Conference of the Parties (COP16) in Cancun, Mexico, in December 2010. Many observers, and indeed some government officials in the West, blamed China for the failure of the Copenhagen meeting, in particular for China's opposition to a binding agreement to reduce global emissions of GHGs by 50% by mid-century (for example, Miliband, 2009).

China was especially strident in opposing any binding cuts in GHGs for any developing countries, although it pledged voluntary efforts to improve its own energy efficiency. Whether China was to blame for the outcome at Copenhagen remains subject to debate, and of course the Chinese strongly denied the accusation (Shi, 2010). What was beyond question, however, was that China had become the largest national source of pollutants causing global warming, thus making its policies and actions central to efforts by governments, industry and individuals to address climate change.

China has been taking steps domestically that will limit its aggregate GHG emissions over business-as-usual scenarios. However, these limitations are far too little compared to the scale of global cuts that will be needed to avert catastrophic climate change. Accordingly, developed countries have pushed China to be more aggressive in limiting its emissions, and to submit to external auditing of the implementation of those limits, ideally to be followed by measurable reductions. These sorts of demands have run up against China's profound sense of grievance generally vis-à-vis the outside world for 20th-century intervention in Chinese affairs (for example, invasions during the first half of the century and perceived efforts to hold back China's development in the second half), and more specifically those demands contradict the argument that the developed countries are to blame for climate change. Consequently, China's diplomatic position does not reflect its new status as the world's largest polluter, nor does it account for the hundreds of millions of newly affluent consumers in China's cities who are consuming and polluting at near-Western levels. Put another way, China's policies on climate change are those of a relatively poor developing country that wishes to focus intently on domestic economic growth and which sees the developed world, particularly the West, as responsible for addressing climate change. China expects wealthy countries to take robust action to limit their own GHG emissions, to reimburse China for the extra cost of more sustainable development practices that it adopts beyond its own domestic plans, and to compensate developing countries for the suffering that will accrue from historical atmospheric pollution.

It was in 2006 that China overtook the United States (US) to become the largest national source of carbon dioxide (CO_2) emissions (Netherlands Environmental Assessment Agency, 2007). China now accounts for a quarter of carbon emissions globally, and in 2008 two thirds of the total global increase in emissions came from China alone (Netherlands Environmental Assessment Agency, 2008). While China's average per-capita emissions remain far below those of the US, in that

same year its per-capita emissions surpassed the global average, placing emissions well above those of most developing countries (Boden et al, 2009). Per-capita emissions are levelling off in the developed world, but in China they are increasing rapidly; for example, China's CO_2 emissions are increasing four to six times as fast as US emissions (Asia Society and Pew Centre on Global Climate Change, 2009, p 18). Despite attempts in China to improve energy efficiency, the country's CO_2 emissions from fossil fuel use alone increased by nearly 80% in just the past decade, with most of this coming from the burning of coal (Boden et al, 2009). Indeed, China's coal-fired power sector is the world's largest anthropogenic source of CO_2 emissions (Lewis and Gallagher, 2011, p 259), and by 2009 the country's CO_2 emissions were 24% of the global total, despite China having substantially less than a quarter of the world's population (Friedlingstein et al, 2010).

China's GHG intensity (emissions per unit of economic output) has improved in recent years, but it is nevertheless among the highest in the world, above averages for other developing countries and well above averages in the developed world (Pew Centre on Global Climate Change, 2007, p 1). This is driven to a significant degree by the use of coal to power the country's export-oriented industries. More generally, a significant source of growth in China's emissions is the production of exports, although the majority of production is consumed domestically, with this consumption almost certainly to increase greatly in the future as more Chinese join the global middle class (Asia Society and Pew Centre on Global Climate Change, 2009, pp 18–20). In the run-up to the Copenhagen conference, China agreed to voluntarily implement a 40–45% reduction in the country's carbon intensity by 2020 (referenced from 2005 emissions). However, from 1991 to 2006, the country's total CO_2 emissions doubled even as carbon intensity dropped by 44% (Lewis and Gallagher, 2011, p 273). In just the four years up to 2006, demand for energy in China grew more than it had in the preceding 25 years put together (Asia Society and Pew Centre on Global Climate Change, 2009, p 19). Thus, if recent trends in economic growth continue, even with the Chinese government's Copenhagen pledge, the country's total emissions will increase, possibly sharply.

Cumulative historical carbon emissions from China are about one fourth those of the US (Pew Centre on Global Climate Change, 2007, p 1), which is by far the largest polluter of the atmosphere historically. However, China is expected to overtake the US in this respect as well by mid-century (Botzen et al, 2008). Consequently, it becomes clearer with time that the world cannot possibly address climate change effectively without China's participation in global cutbacks in GHGs,

something that has always been said about the US and some other Western countries (and which remains true), but which in the case of China is a new phenomenon that has occurred alongside its rapid economic development over the last three decades.

China's climate-related objectives

What explains China's climate change policies, and what is the government trying to achieve through them? China first became involved in international discussions on climate change in the 1980s when it collaborated with the US to study the impacts of CO_2 emissions (Schroeder, 2009, p 57), thus beginning a process of growing Chinese involvement and interest in climate diplomacy and its impact on international relations, economics and the environment. China's climate change diplomacy became more proactive in the 1990s when it joined with other developing countries to influence negotiation of the 1992 UNFCCC and the 1997 Kyoto Protocol. These negotiations affirmed the principle of common but differentiated responsibility (CBDR) of states for climate change. This principle established that the world's developed countries were most responsible for climate change and thus should take the lead in reducing GHG emissions and helping developing countries address the problem. Generally speaking, for China climate change went from being a scientific issue in the 1980s to being a developmental (and highly politicised) issue by the 1990s (Lewis and Gallagher, 2011, p 269), where it remains today. As a developing country, China is not legally required to limit its GHG emissions in any way. It defends this position and, as demonstrated at Copenhagen, has shown few signs of allowing change in successor agreements to the Kyoto Protocol. Nevertheless, it is taking steps domestically to become more energy efficient, in effect limiting what would otherwise be a larger contribution to global warming.

China's policies on managing climate change are officially guided by six principles (NDRC, 2007, pp 24-5):

- addressing climate change within the broader framework of the country's 'national sustainable development strategy';
- adhering to the principle of CBDR;
- addressing both climate change mitigation and adaptation;
- integrating climate change-related policies with programmes for 'national and social economic development';
- relying on technological advancement for effectively mitigating and adapting to climate change; and
- 'actively and extensively' participating in international cooperation on climate change.

Generally speaking, what comes from these principles is a clear indication that climate change is taken seriously, but also that it does not take priority over China's other national objectives. If climate change mitigation and adaptation can be made consistent with those objectives, China will act forthrightly. If advantages for development and other objectives can be rung from the climate change issue, China will exploit them (for example, in extracting funding and technology for both economic development and GHG mitigation).

The second of these objectives – CBDR – largely determines how far China is willing to go in meeting the demands of outsiders for greater domestic action, particularly with regard to GHG limitations. It is important not to underestimate the extent to which Chinese officials take the principle of CBDR. They interpret it very strictly as requiring that:

> developed countries take the lead in reducing greenhouse gas emissions as well as providing financial and technical support to developing countries. The first and overriding priorities of developing countries are sustainable development and poverty eradication. The extent to which developing countries will effectively implement their commitments under the [UNFCCC] will depend on the effective implementation by developed countries of their basic commitments. (NDRC, 2007, p 24)

A clear statement on China's minimum position with regard to climate change negotiations and obligations can be derived by simply replacing 'developing countries' in this statement of principle with 'China'.

This leads to the Chinese government's overriding short- and medium-term priority in the context of climate change (and in most other policy contexts): economic growth. To be sure, there are a number of other fundamental concerns underlying China's positions, notably:

- sovereignty and non-interference in internal affairs (see Zhang, 2003);
- social stability and regime vitality;
- propaganda and support for the party and the government;
- demonstrating leadership among developing countries and challenging the international authority of the US;

- environmentally sustainable development as a medium- and long-term objective; and
- obtaining aid and technology from developed countries (see Kobayashi, 2003).

Although China's leaders are increasingly concerned about climate change, in terms of both its impacts on the country and its international political ramifications, the issue 'has not surpassed economic development as a policy priority' (Lewis and Gallagher, 2011, p 269). Economic development is in turn tied to the ruling party's policy objectives (for example, lifting the Chinese out of poverty and using growing economic strength for national defence and to ensure territorial integrity) and, very fundamentally, the party's apparent assumption that economic growth is essential to regime survival and more generally to political stability (see Shirk, 2007). In particular, according to Abebe and Masur (2010), the regime is focused on developing the Western provinces to avoid unrest: 'The social and economic disparities between East[ern China] and West[ern China] have made rapid western growth a political imperative for the Chinese Communist Party, which will be loath to sign any climate agreement that might stunt this growth' (Abebe and Masur, 2010, p 388).

While China has many domestic policies related to climate change, such as increasingly significant efforts by the central government to encourage energy efficiency and to provide support for alternative energy production (see Government of China, 2008), those policies are driven by objectives other than fighting climate change, such as energy security, technology innovation to enhance economic competitiveness, and profiting from the Kyoto Protocol's Clean Development Mechanism. In other words, China's climate change policies are only incidentally or at best indirectly related to climate change.[2] This may change as the impacts of climate change to be experienced in China become more immediate, although even then the official calculus may be that economic growth is more desirable given its political and social benefits in the short term and its potential to provide resources to aid adaptation to climate change in the future. In short, the calculus may continue to be that mitigation is more costly for the regime and for the economy than is adaptation. This would help to explain China's focus on adaptation over mitigation in international negotiations over the last decade.

Some scholars argue that the 'norm of climate protection [has] become internalized in Chinese politics' (Schroeder, 2009, p 52), while others focus on the extent to which the Chinese government's

rhetorical claims to care about environmental issues are not matched by policy implementation, often due to local corruption (Economy, 2007). What is clearer is that the Chinese government is opposed to outside monitoring of its GHG emissions, an issue that exercised world leaders at the Copenhagen summit. China's policy in this respect is driven first by its obsession with sovereignty and its total opposition to 'intervention' in its internal affairs (see Drexhage and Murphy, 2009, p 3), but also by concerns that the central government simply cannot guarantee that its pledges will be fully implemented. In short, the Chinese government will oppose international policies that could be interpreted by Chinese officials as intervention. China's reticence about allowing outside monitoring of its emissions is also a function of the central government's weak capacity in this respect, exacerbated by the longstanding problem of lack of transparency related to statistics of almost any kind. Thus, the seemingly reasonable demand from the US and some other countries at Copenhagen for China to agree to monitoring of its emissions targets is, from the Chinese perspective, partly unreasonable and partly unworkable.

Until very recently, China stood alongside developing and very poor countries in international negotiations related to climate change. Indeed, experts have argued that its positions rarely deviate from those of the developing world (see, for example, Lewis, 2007-2008, p 163; Harris and Yu, 2009, p 62). However, this changed quite dramatically at the Copenhagen conference when China joined forces with a number of large and relatively well-off developing countries – the so-called BASIC states, comprising Brazil, South Africa, India and China – to refuse binding limitations on these countries' GHG emissions despite pleadings from extremely vulnerable poor countries, especially small-island states, for China to accept GHG limitations that might help mitigate what for them is an existential threat. To this extent, China is no longer a champion of the developing world; like many rich countries, it is now unquestionably a champion of its own national interests regardless of the costs for those countries that are most vulnerable to climate change.

China's position in future international negotiations on climate change could go in one of three directions. It is possible, perhaps likely in the near term, that the government will dig in its heels (alongside some other large developing countries, such as the BASIC states) and refuse to alter the position it took in Copenhagen. Alternatively, China may surprise analysts by becoming much more proactive in agreeing to limits on its GHG emissions. Also possible is something in between, but close to its historical position – reaffirmed so forthrightly at

Copenhagen – to refuse binding emissions limitations while gradually agreeing to voluntary emissions measures, perhaps starting with a stronger energy-intensity target (given that the one agreed in the context of Copenhagen lacked ambition) and eventually agreement on a firm date when China's emissions will peak and begin to decline. China probably will not agree to economy-wide limitations on GHG emissions, but it is likely to agree to limitations within specific programmes and projects, especially when those can benefit from deployment of alternative energy sources coming on line and already planned. At the same time, China will continue to enact and try to implement policies domestically that move more or less in the direction of GHG limitations, consistent with broader national developmental goals (cf Lewis and Gallagher, 2011, p 273).

What is clear at this point in time is that the Chinese government is not planning to make major concessions on climate change in the near future. Indeed, Su Wei, China's top official on climate change matters, said in early 2010 that the country's emissions would have to increase, that the government will continue to be guided by the CBDR principle and that 'China "could not and should not" set an upper limit on greenhouse gas emissions' (Xinhua, 2010). Consequently, agreement from China to take on new binding obligations to cap or limit – least of all reduce – its GHG emissions, or to submit to independent verification of those emissions, seems unlikely at present (see Shi, 2010). Bold moves by developed countries towards reducing their own GHG emissions are almost certainly a *prerequisite* for such a change in Chinese policy in the medium term.

China's climate change policy will be influenced by events in the US. If a compromise on climate change-related energy legislation can be reached in Washington (a possibility, albeit with many compromises and thus relatively meagre US emissions cuts), it is likely that the medium-term outcome will be trade-related measures (that is, tariffs) by the US and indeed other Western countries to address China's relatively high emissions per unit of production (see Pew Centre on Global Climate Change, 2009). If not handled properly, pressure on China from these measures could result in a backlash whereby China actually delays climate-related policies to avoid the appearance of giving in to outside pressure, such is the importance of its historical grievance vis-à-vis the outside world.

Domestic policies related to management of climate change (but not directly driven by the problem) are easier to predict. China will continue to become more energy efficient relative to economic output, and new energy-efficient technologies will be adopted in so

far as they are consistent with overall development objectives (that is, the cost-benefit analysis of adopting them is favourable relative to less efficient technologies) and when they bring in additional funding, investment and access to technology from abroad. In short, China's GHG emissions will not be as high as they might be without conscious efforts by the government and international partners to encourage more environmentally sustainable development domestically. Whether this will be enough to actually bring the increase in China's emissions to a halt anytime soon, and then to start reducing them, is an open question – but this is unlikely to start happening soon enough to avert many of the severe consequences of climate change.

Exploring China's responsibility for climate change

Contributions to this volume help to answer the question of whether and how China is responsible for climate change. The chapters are arranged into three additional parts. Part Two of the book assesses responsibilities for climate change and related considerations of fairness and rights. Part Three examines the implications of climate-related responsibilities for climate policy. Part Four concludes the book, focusing especially on the role of individuals in causing and responding to climate change.

Determining responsibility

We begin in Chapter Two with Derek Bell's analysis of historical emissions, climate duties and human rights. As we have seen, like the governments of many other developing countries, the Chinese government adheres to two fundamental principles. The first principle is that of historical responsibility or 'polluter pays', which affirms that developed states of the global North should bear the costs of addressing climate change because they are historically responsible for most GHG emissions that have causally contributed to problem. According to the Chinese interpretation of this principle, current and future allocations of costs associated with dealing with climate change should be based on each state's cumulative or historical emissions of GHGs. The second principle is that developing countries of the global South have a right to development. They should not be required to sacrifice their development to address problems arising from climate change. Consequently, the costs of climate change should be borne by those who can afford to bear them, namely the developed countries. With this in mind, Bell outlines an account of 'climate justice' that addresses

the question of how to fairly allocate the costs of climate change. Drawing on the 'Greenhouse Development Rights' framework, he arrives at a human rights-based approach to climate justice, albeit one that rejects the principle of 'equal per-capita emissions' and focuses instead on duties of rectification that anyone who fails to comply with a general climate duty should incur. Bell argues, consistent with the Chinese position, that citizens of developed countries have duties to pay compensation for their excessive and unjust GHG emissions during the last 20 or 30 years. However, Bell concludes that earlier historical emissions are not relevant in the straightforward way that Chinese officials may assume.

In Chapter Three, Olivia Bina looks more deeply at climate change and the rights to development often asserted by China. She believes that, particularly in the case of China, economic growth and environmental protection have never been in such conflict as they are now. She argues that 'the climate change crisis is the ultimate expression of unsustainable patterns of growth'. The tension surrounding climate change negotiations is closely linked to the unresolved question of how to reconcile aggressive pursuit of economic growth with the Earth's ecological limits. The use of energy is illustrative, with Bina describing in some detail China's enormous contribution to the global growth in the use of fossil fuels. Indeed, she points out that three fourths of the increase in energy-related CO_2 emissions to 2030 will come from China. After linking climate change to economic growth, Bina explores the question of responsibility for limiting GHG emissions as it relates to the pursuit of economic development. According to Bina, China's leaders have an opportunity to embark on a development path that avoids 'undifferentiated irresponsibility' of *all* countries, rather than the common but differentiated responsibility that has been agreed in international climate negotiations. For Bina, the promise of a 'new path for development' can be realised if China pursues bold alternatives to so-called 'efficient growth'.

Following a theme that permeates the book, in Chapter Four Christian Ellermann, Niklas Höhne and Benito Müller examine historical responsibilities for climate change. Like other contributors, they pull apart the notion of historical responsibility and challenge common assumptions about it, doing so through rigorous analysis of data. Their chapter delves into a politically sensitive aspect of past GHG emissions, namely the issue of *differentiating* historical responsibility. In so doing it shows that *contributions to* climate change and *responsibility for* it are fundamentally different. Ellermann, Höhne and Müller describe a methodology for calculating 'shares of responsibility' – rather than

'shares of causal contribution', which are more commonly addressed in analytical models. They apply their methodology to the case of China, using two conceptions of responsibility – 'strict' and 'limited' – to help operationalise the CBDR principle in the Chinese context. The key message resulting from Ellermann, Höhne and Müller's calculations is that causal contributions to climate change, while an important indicator of environmental impact, ought not be confused with moral and legal responsibility for the problem. The significant difference between *contribution to* climate change and *responsibility for* it requires us to think in new ways about the sorts of burdens that can justly be demanded when applying the CBDR concept, notably in the case of China.

In Chapter Five, Jonathan Symons looks at China's responsibility for climate change in a new way, basing his analysis on whether China is cooperating with other countries to solve the problem. Given the divergent conceptions of fairness held by different countries, Symons argues that *cooperation* should be accepted as an independent normative goal within climate negotiations, and that each government's negotiating position should be assessed against the pragmatic standard of its contribution to effective international cooperation. As a measure of the point at which fairness concerns become an obstacle to cooperation, he draws on the distinction between 'equitable CBDR', which tilts the distribution of cooperative surplus towards certain parties, and 'inefficient CBDR', which allocates more than the entire net surplus of cooperation to certain parties and so strips states of their incentive to cooperate. Symons argues that the emissions-intensity targets that China promised at Copenhagen were consistent with both equitable CBDR and a cooperative outcome. However, China's refusal to accept the targets as *binding* totally undermines its positive contribution, making the country a central obstacle to international cooperation. Symons develops a 'non-cooperator pays' principle, which states that 'actors negotiating to secure an essential public good that cannot be provided without widespread cooperation are justified in seeking to induce cooperation by imposing costs on non-cooperators, even if this cost allocation would be considered unjust in the absence of the collective action problem'. Given that Symons argues for a country's responsibility for climate change to be assessed in terms of both its contribution to international cooperation and its actual emissions, it might be fair for future international agreements to penalise China for its failure to be more cooperative. Controversially, one way to do this might be border tax adjustments or carbon tariffs that equalise the costs of GHG emissions that are embodied in China's exports.

Policy implications

Part Two of the book continues to assess China's responsibilities related to climate change, in the process looking more intently at related implications for the country's domestic and international policies. In Chapter Six, Erich W. Schienke looks at the many ways in which ethical obligations related to climate change play out across various sectors inside China. He considers China's obligations according to eight 'ethical dimensions': responsibility for damages, atmospheric targets, allocation of emissions, uncertainty, economic costs, responsibility to act, technology and procedural fairness. Schienke describes the ethics of what he calls 'China's climate problem' as a series of interrelated issues at multiple 'scales of governance'. Schienke argues that a normative analysis of China's obligations may not fully reveal that what seems to be ethically coherent at the scale of national governance is something that becomes quite difficult to interpret as clear ethical directives at the levels of regional, local or urban governance. Although the nation of China may have a clear directive as to how much it needs to mitigate to reduce emissions, how to implement the distribution of mitigation efforts to regions with diverse geography and distribution of wealth is less clear. The problem of distributing China's mitigation costs and efforts internally is made even more ethically complex when one takes into account mismatches between scales of governance, such as the size and scope of institutions and the scales of certain ecosystems, such as carbon sinks in forests that may cross multiple municipalities or regional authorities. That is, saying what China's ethical obligations should be to address global climate change is much more straightforward than determining how it should actually address climate change as an internal matter of governance.

Another approach to the question of China's climate-related responsibilities is found in Chapter Seven. Instead of the much more common analysis of long-term greenhouse gases, such as CO_2, in this chapter Frances C. Moore and Michael C. MacCracken look at questions of climate fairness from the perspective of so-called 'short-lived' GHGs, in particular black carbon. Short-lived GHGs, which also contribute to general air pollution, have a major role in global warming; black carbon alone is probably the second or third most important GHG. Unlike cutting CO_2, reducing emissions of these short-lived GHGs results in a rapid reduction in their contribution to global warming. The short-lived pollutants also have significant adverse impacts on human and environmental health at regional and local levels. Significantly, technologies to reduce emissions of these

gases are readily available, cost-effective and already widely deployed in developed countries. Reducing these pollutants is therefore a relatively easy mitigation pathway for developing countries that is both appropriate to their level of development and highly effective from the perspective of climate. It is also consistent with principles of fairness based on responsibility and capability that have been important in international negotiations on climate change. As such, cutting short-lived GHGs offers a pathway out of the current deadlock between developed and developing countries in which each group asks for more substantial emissions-reduction commitments from the other before taking action. As the world's largest black-carbon soot emitter, China could push for substantial CO_2 mitigation commitments from the developed countries in return for more aggressive action than it is presently taking to reduce its soot emissions. Such an approach would be consistent with China's own development strategy, would contribute substantially to the mitigation of climate change and would lower the likelihood of passing serious and potentially irreversible tipping points in the coming decades.

In Chapter Eight, Patrick Schroeder looks at China's responsibility for climate change from the perspective of 'sustainable consumption and production' (SCP). The SCP approach is an integrative analytical perspective that captures the complex relationship between economic activity, human wellbeing and environmental degradation. It is what Schroeder describes as an 'international political process to promote and support policies and actions necessary for systemic transition towards sustainable consumption and production patterns'. SCP encompasses a set of practical solutions or tools for addressing social, economic and environmental problems arising from unsustainable production and consumption. Drawing on the SCP perspective, the chapter discusses the responsibilities of a range of stakeholders in China's consumption-and-production systems that are connected through global value chains. Schroeder shows that attributing responsibility for China's growing impacts on global climate is a complex issue because responsibility should be shared between producers and consumers within China *and* in other countries. The chapter identifies opportunities for using the SCP approach to undertake 'environmental leapfrogging' in the areas of energy, industrial manufacturing, urban development and consumer behaviour. According to Schroeder, the application of the conceptual and practical approaches of SCP is necessary if China is to address the underlying causes of climate change and move towards a low-carbon economy and society.

In the penultimate chapter of the book, Andreas Oberheitmann and Eva Sternfeld analyse the implications for China of a new post-Kyoto climate change regime based on cumulative per-capita CO_2 emissions. They begin by reminding us that nearly half of the global increase in carbon emissions over the last decade has come from China alone. Consequently, they argue that great importance must be attached to China's environmental and energy policies and its involvement in shaping the post-Kyoto climate change regime. Oberheitmann and Sternfeld's chapter aims to start devising such a regime and to analyse the role that China might play in it. They describe several proposals for post-Kyoto regimes that have been discussed internationally, showing that all of them have drawbacks. For example, the biggest disadvantage of approaches taken so far is that they fail to make allowance for the fact that China (and other newly industrialised countries) are becoming increasingly responsible for future concentrations of CO_2 that are now accumulating in the atmosphere. Nevertheless, those approaches employ a fair mechanism for allocating emissions rights in terms of per-capita allowances. With this in mind, Oberheitmann and Sternfeld propose a new climate regime based on *cumulative* per-capita CO_2 emission rights measured in a way that they believe resolves the disadvantages inherent in other approaches. Environmental equity in responsibility for climate change can be achieved if historical carbon emissions of developed countries since 1750 are taken into account *along with* the growing emissions since the 1980s of China and other developing countries. An international trading system based on their new regime might encourage low-carbon technology transfer, and it might provide financial support to help China develop more sustainably.

In Part Four and Chapter Ten, I return to some of the major themes of the book in a final attempt (in this book) to answer the underlying question at hand: is China responsible for climate change? Not surprisingly, the answer must always be prefaced by 'it depends'. It depends on whether we are looking only at the Chinese state or also at the Chinese people. Arguably, the responsibility of the former is less from the perspective of the past and greater from a future perspective. What seems beyond doubt is that some people in China are already responsible for their contributions to future climate change, and for doing something about it right now.

Notes

[1] Parts of this chapter build on Harris (2010a, 2010b).

[2] Arguably, it does not matter from whence the motivation for implementing climate-friendly policies originates. What matters is the effect. However, the policies might be far more robust, and more routinely implemented, if they were motivated by a strong official desire to mitigate the causes and consequences of climate change.

References

Abebe, D. and Masur, J.S. (2010) 'International agreements, internal heterogeneity, and climate change: the "two Chinas" problem', *Virginia Journal of International Law*, vol 50, no 2, pp 326–89.

Asia Society and Pew Centre on Global Climate Change (2009) *Common challenge: A roadmap for U.S.–China cooperation on energy and climate change*, Arlington, VA: Pew Centre on Global Climate Change and Asia Society.

Boden, T.A., Marland, G. and Andres, R.J. (2009) *Global, regional, and national fossil-fuel CO_2 emissions*, Oak Ridge, TN: Oak Ridge National Laboratory.

Botzen, W.J.W., Gowdy, J.M. and Van Den Bergh, J.C.J.M. (2008) 'Cumulative CO_2 emissions: shifting international responsibilities for climate debt', *Climate Policy*, vol 8, pp 569–76.

den Egenhofer, C. and Georgiev, A. (2009) *The Copenhagen Accord: A first stab at deciphering the implications for the EU*, Brussels: Centre for European Policy Studies.

Drexhage, J. and Murphy, D. (2009) 'Copenhagen: a memorable time for all the wrong reasons?', *IISD commentary*, Winnipeg: International Institute for Sustainable Development.

Economy, E. (2007) 'The great leap backward?', *Foreign Affairs*, vol 86, no 5, pp 38–59.

Friedlingstein, P., Houghton, R.A., Marland, G., Hackler, J., Boden, T.A., Conway, J., Canadell, J.G., Raupach, M.R., Ciais, P. and Le Quéré, C. (2010) 'Update on CO2 emissions', *Nature Geoscience*, vol 3, no 11 (doi: 10.1038/ngeo1022).

Government of China (2008) *China's policies and actions for addressing climate change*, White Paper, Beijing: Government of the People's Republic of China.

Hamilton, C. (2010) *Requiem for a species: Why we resist the truth about climate change*, London: Earthscan.

Harris, P.G. (2010a) 'China and climate change: from Copenhagen to Cancun', *Environmental Law Reporter: News & Analysis*, vol 40, no 9, pp 10858-63.

Harris, P.G. (2010b) 'Misplaced ethics of climate change: political vs. environmental geography', *Ethics, Place & Environment*, vol 13, no 2, pp 215-22.

Harris, P.G. and Yu, H. (2009) 'Climate change in Chinese foreign policy: internal and external responses', in P.G. Harris (ed) *Climate change and foreign policy: Case studies from East to West* (pp 52-67), London: Routledge.

Hu Jintao (2009) 'Join hands to address climate change', Statement by H.E. Hu Jintao, President of the People's Republic of China, at the Opening Plenary Session of the United Nations Summit on Climate Change, New York, 22 September.

IISD (International Institute for Sustainable Development) (2009) *A brief analysis of the Copenhagen climate change conference*, New York, NY: IISD Reporting Services.

IPCC (Intergovernmental Panel on Climate Change) (2007) *Climate change 2007: Synthesis report*, Cambridge: Cambridge University Press.

Kobayashi, Y. (2003) 'Navigating between "luxury" and survival emissions: tensions in China's multilateral and bilateral climate change diplomacy', in P.G. Harris (ed) *Global warming and East Asia: The domestic and international politics of climate change* (pp 86-108), London: Routledge.

Lewis, J.I. (2007-2008) 'China's strategic priorities in international climate change negotiations', *Washington Quarterly*, vol 31, no 1, pp 155-74.

Lewis, J.I. and Gallagher, K.S. (2011) 'Energy and environment in China: achievements and enduring challenges', in R.S. Axelrod, S.D. Vandeveer and D.L. Downie (eds) *The global environment: Institutions, law and policy* (pp 259-84), Washington, DC: CQ Press.

McCarthy, J.J. (2009) 'Reflections on our planet and its life, origins, and futures', *Science*, vol 326, no 5960, pp 1646-55.

McMullen, C.P. and Jabbour, J. (eds) (2009) *Climate change science compendium 2009*, Nairobi: United Nations Environment Programme.

Miliband, E. (2009) 'The road from Copenhagen', *The Guardian*, 20 December, www.guardian.co.uk/commentisfree/2009/dec/20/copenhagen-climate-change-accord

NDRC (National Development and Reform Commission) (2007) *China's National Climate Change Programme*, Beijing: NDRC.

Netherlands Environmental Assessment Agency (2007) 'China now no. 1 in CO_2 emissions; USA in second position' (press release), The Hague: Netherlands Environmental Assessment Agency.

Netherlands Environmental Assessment Agency (2008) 'China contributing two-thirds to CO_2 emissions' (press release), The Hague: Netherlands Environmental Assessment Agency.

Pew Centre on Global Climate Change (2007) 'Climate change mitigation measures in the People's Republic of China', *International Brief*, no 1, www.pewclimate.org/policy_center/international_policy

Pew Centre on Global Climate Change (2009) 'Addressing competitiveness issues in climate legislation', *Climate Policy Memo*, no 5, www.pewclimate.org/acesa/addressing-competitiveness

Rasmussen, L.L. and Ban, K.M. (2009) 'Letter from the Prime Minister of Denmark and the United Nations', www.stm.dk/_p_12544.html

Schroeder, M. (2009) 'The construction of China's climate politics: transnational NGOs and the spiral model of international relations', in P.G. Harris (ed) *The politics of climate change: Environmental dynamics in international affairs* (pp 51-71), London: Routledge.

Shi, J. (2010) 'Wen offers his personal account of Copenhagen climate summit snub', *South China Morning Post*, 15 March, pp A5-A6.

Shirk, S. (2007) *China: Fragile superpower*, Oxford: Oxford University Press.

UNEP (United Nations Environment Programme) (2009) *Climate change science compendium*, Nairobi: UNEP.

UNEP (2010) *The emissions gap report: Are the Copenhagen Accord pledges sufficient to limit global warming to 2° C or 1.5° C? – a preliminary assessment* (November 2010 advance copy), Nairobi: UNEP, www.unep.org/publications/ebooks/emissionsgapreport/

UNFCCC (United Nations Framework Convention on Climate Change) (2009) *Copenhagen Accord*, New York, NY: United Nations, http://unfccc.int/resource/docs/2009 /cop15/eng/l07.pdf

Xinhua (2010) 'China has "no intention" of capping emissions', Xinhua News Agency, 25 February, http://news.xinhuanet.com/english2010/china/2010-02/25/c_13187687.htm

Zhang, Z. (2003) 'The forces behind China's climate change policy: interests, sovereignty and prestige', in P.G. Harris (ed) *Global warming and East Asia: The domestic and international politics of climate change* (pp 66-85), London: Routledge.