

This article was downloaded by: [University of Warwick]

On: 22 October 2012, At: 06:46

Publisher: Routledge

Informa Ltd Registered in England and Wales Registered Number: 1072954  
Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH,  
UK



## Democratization

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/fdem20>

### The hidden costs of carbon commodification: emissions trading, political legitimacy and procedural justice

Edward A. Page <sup>a</sup>

<sup>a</sup> Department of Politics and International Studies,  
University of Warwick, Coventry, UK

Version of record first published: 22 Oct 2012.

To cite this article: Edward A. Page (2012): The hidden costs of carbon commodification: emissions trading, political legitimacy and procedural justice, *Democratization*, 19:5, 932-950

To link to this article: <http://dx.doi.org/10.1080/13510347.2012.709689>

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: <http://www.tandfonline.com/page/terms-and-conditions>

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae, and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand, or costs or damages

whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

## The hidden costs of carbon commodification: emissions trading, political legitimacy and procedural justice

Edward A. Page\*

*Department of Politics and International Studies, University of Warwick, Coventry, UK*

*(Received 19 March 2012; final version received 25 June 2012)*

A growing body of academic literature is devoted to the normative evaluation of rival governance architectures and policy mechanisms designed to mitigate the risks associated with global climate change. The United Nations Framework Convention on Climate Change (UNFCCC) of 1992, the Kyoto Protocol to the UNFCCC of 1997 and the Copenhagen Accord ‘noted’ by the UNFCCC of 2009, have all been the subject of intense analysis in this literature. Typically, the emphasis of normative analyses of climate governance have focused on the environmental effectiveness, economic efficiency, and global distributive consequences of alternative climate architectures and policy mechanisms. A neglected line of evaluation, however, has been the performance of these climate architectures, and the policies they systematize, in terms of normative ideals whose meaning and significance cannot be fully captured in terms of the goal to improve environmental quality at least economic cost and with minimal worsening of existing global inequalities. Two such ideals are those of *political legitimacy* and *procedural justice*. This study explores the various ways in which one particularly important component of the emerging global climate architecture, *greenhouse gas emissions trading*, raises significant questions of political legitimacy and procedural justice. It argues that the well understood cost efficiency and environmental quality benefits conferred by emissions trading schemes come at the price of potentially corrosive effects for procedural justice and political legitimacy. The tensions that arise have special relevance to democratic theory and practice by virtue of the close association that political legitimacy and procedural justice have to the ideal of democracy. However, considerations of political legitimacy and procedural justice also raise questions of citizen and civil society participation, accountability and transparency that go far beyond their key role in discussions of democratic legitimacy or democratization.

**Keywords:** climate change; global governance; political legitimacy; emissions trading; procedural justice

---

\*Email: [E.A.Page@warwick.ac.uk](mailto:E.A.Page@warwick.ac.uk)

## Introduction

A growing body of academic literature is devoted to the development of normative standards suitable for application to emerging global governance institutions (GGIs).<sup>1</sup> GGIs, such as the World Trade Organization and World Bank, possess a range of properties that make them normatively significant. GGIs are designed to solve trans-boundary collective action problems that individual states cannot solve by acting alone and they can thus be evaluated in terms of their effectiveness in meeting this objective. GGIs also wield significant trans-boundary influence and authority in the policy areas where they claim competence, thereby raising the question of how this influence and authority might be justified. Global climate governance institutions (GCGIs) – such as the United Nations Framework Convention on Climate Change (UNFCCC) of 1992 and the Kyoto Protocol to the UNFCCC of 1997 – have also attracted increasing scrutiny from normative theorists.<sup>2</sup> As with the more established GGIs, it can be asked what conditions must obtain for GCGIs to be viewed as wielding legitimate and just authority. GCGIs seek to provide an international framework of political and legal norms designed to respond to the threats posed to human wellbeing by global climate change. However, it is the particular mixture of policies and mechanisms endorsed by each GCGI that will differentiate the impact of each in terms of the overriding aim of the UNFCCC to prevent dangerous climate change.

An extensive literature now exists that examines the environmental effectiveness, economic efficiency, distributive equity, and political feasibility, of particular climate mitigation policies and measures.<sup>3</sup> Such policies and measures are typically separated into a number of categories of which the two most important are (i) direct government regulation of emissions (such as legally binding annual greenhouse gas emissions targets for businesses and public institutions) and (ii) market-based mechanisms designed to promote environmental quality by forcing citizens and firms to internalize the full social cost of their climate change altering behaviour (such as emissions trading and carbon tax schemes).<sup>4</sup> For their alleged superiority over rival responses, above all in terms of economic efficiency and environmental effectiveness, market-based mechanisms have emerged as a key element of the national, regional, and global climate policy nexus.<sup>5</sup> Emissions trading schemes, in particular, have attained an unparalleled status in the theory and practice of climate governance. The evolution of emissions trading from relative obscurity at the time of the signing of the UNFCCC in 1992, the core element of global climate governance at the time of the Seventeenth Conference of the Parties to the UNFCCC in 2011, is evidenced by its current use in over thirty states worldwide and by the startling increase in value of the global emissions trading markets from US\$11 billion (in 2005) to \$142 billion (in 2010).<sup>6</sup>

In this account, I focus on two normative desiderata – *political legitimacy* and *procedural justice* – that cannot be reduced without remainder to considerations of environmental effectiveness and economic efficiency that currently dominate normative treatments of climate change.<sup>7</sup> The two desiderata are of particular

relevance to questions of democratization and public justification but their importance has significance beyond their key role in discussions of democratic theory and practice. First, an adequate treatment of these two ideals will be a key feature of any coordinated international climate response that hopes to generate stable and widespread support amongst 'atmospheric users'<sup>8</sup> affirming diverging substantive normative commitments. Second, emissions trading has swiftly become a major focus of legitimation and de-legitimation, with the academic literature being deadlocked between enthusiasts<sup>9</sup> (who hold that the efficiency and environmental benefits of emissions trading come at little or no risk of injustice or illegitimacy) and sceptics<sup>10</sup> (who hold that emission trading is flawed in terms of political legitimacy, procedural justice and environmental effectiveness). Although much is already known about the theory and practice of emissions trading, systematic normative analysis is clearly required to clarify, and if possible resolve, this deadlock. The specific question I address is the following: taking an idealized account of emissions trading as a point of departure, is emissions trading capable of providing the basis of a politically legitimate and procedurally just response to climate change?

In the next section, I briefly outline the basic theory and two main forms of emissions trading in order to provide a theoretically and empirically informed basis for the subsequent normative analysis. In the two sections thereafter, I analyse emissions trading, first, from the perspective of political legitimacy and, second, from the perspective of procedural justice. I argue in these sections that emissions trading schemes are subject to significant problems of political legitimacy and even more pronounced problems of procedural justice that resist straightforward solution. A final section summarizes the argument and deals with some open questions.

### **Global emissions trading in theory and practice**

Greenhouse gas emissions trading is a market-based (or 'economic') environmental policy response that seeks to control emissions of greenhouse gases by forcing atmospheric users to cover the full social cost of their annual emissions of carbon dioxide (CO<sub>2</sub>) and other greenhouse gases. It does this by putting a price on each tonne of greenhouse gas these users emit. The relevant price is determined by the free exchange of a limited number of government-issued 'emissions allowances', where each allowance confers on their bearers the right to emit one tonne of carbon dioxide equivalent (CO<sub>2</sub><sup>e</sup>) within a specified timescale and jurisdiction. The idea is that pollution costs that were previously externalized become internalized by those responsible for their production, with the result that the capacity of the atmosphere to assimilate greenhouse gases will be used more efficiently and sparingly.

There are two main ways in which emissions trading can be operationalized internationally, each of which raises a unique set of questions of legitimacy and procedural justice. 'Credit-and-baseline' schemes, such as the Kyoto Protocol's

Clean Development Mechanism (CDM), issue 'emissions credits' to developers of projects (such as wind farms or methane capture from landfill) that reduce CO<sub>2</sub><sup>e</sup> within a specified jurisdiction. These credits then make their way through the emissions trading markets before being surrendered to regulators by participating agents. To be officially recognized by the UNFCCC, new emissions credits must meet two conditions. First, the projects would not have occurred without the intervention of the project owners (the 'additionality condition'). Second, the success of the project – and thus the number of credits issued – is a function of the actual CO<sub>2</sub><sup>e</sup> emissions of the territory affected relative to a hypothetical baseline modelling the quantity of CO<sub>2</sub> that would have been released into the atmosphere had the project not gone ahead (the 'counterfactual baseline condition'). The total value of the trade in emissions trading credits in 2010 was \$21 billion (equivalent to 15% of the global emissions trading market by value).<sup>11</sup>

'Cap-and-trade' schemes, by contrast, such as the emissions trading scheme currently encompassing roughly 40% of all current European Union (EU) CO<sub>2</sub><sup>e</sup> emissions, involve the issuance and free trade of allowances each conferring the right to emit one tonne of CO<sub>2</sub><sup>e</sup>. Cap-and-trade schemes (which had a combined value of \$123 billion in 2010 – roughly 84% of the global emissions trading market by value) have four key features.

First, regulators place a legal limit on the collective CO<sub>2</sub><sup>e</sup> emissions of participating users over an extended time-frame. This 'cumulative emissions cap' is then translated into a series of annual emissions caps modelling the preferred CO<sub>2</sub><sup>e</sup> emissions pathway of regulators (an 'emissions pathway' is effectively a juxtaposition of a projected peak year for CO<sub>2</sub><sup>e</sup> emissions within some jurisdiction combined with a subsequent annual rate of decrease in these emissions). The cumulative emissions cap, which is the key to the scheme's environmental effectiveness, determines the upper limit for the number of emissions allowances available for allocation and subsequent trade (and thus the total amount of CO<sub>2</sub><sup>e</sup> that can be emitted) during the lifetime of the scheme.

Second, a limited number of authorized emissions allowances are issued annually to agents targeted by the scheme, either *directly* (through highest bidder auctions or free allocation) or *indirectly* (through market intermediaries). These allowances are time-dated but the scheme may permit 'allowance banking' (so owners can save allowances for use in future years) or 'allowance borrowing' (so owners can use future-dated allowances to cover their yearly emissions).<sup>12</sup> At the end of each year, each participant must surrender one allowance to the regulator for each metric tonne of CO<sub>2</sub><sup>e</sup> they emitted during the previous 12 months.

Third, once in operation, scheme participants are encouraged to buy and sell emissions allowances as they see fit so long as they fulfil their legal obligations under the scheme. Each participant is at liberty to select the emissions level that is most economically efficient for them so long as they surrender the appropriate number of emissions allowances at the end of each year of the scheme. The idea here is that the social cost of achieving the selected emissions reduction pathway

will be minimized through a process whereby emissions allowances, as valued commodities, flow to the participants that value them highest thereby guaranteeing that emissions reductions measures occur at their least costly location.<sup>13</sup>

Fourth, agents with legal duties under the scheme that fail to surrender the required number of allowances in any year are subject to legal remedies in order to deter future, or punish past, non-compliance. These legal remedies typically amount to a combination of financial penalties, the requirement to surrender additional allowances in order to offset past emissions allowance shortfalls, and the requirement to undertake additional CO<sub>2</sub><sup>e</sup> reduction measures.

Emissions trading schemes exhibiting the above four features raise a number of potential problems for accounts of environmental governance that seek to internalize strong norms of political legitimacy and procedural justice:

- (i) emissions trading schemes introduce new rules, and associated compliance costs, associated with the requirement that participants surrender emissions allowances in proportion to their annual CO<sub>2</sub><sup>e</sup> emissions. Since these rules involve a significant deviation from the historical pattern of expectations and entitlements surrounding past usage of the storage and sink capacity of the atmosphere, these rules and their issuing institutions need to be justified to scheme participants whose behaviour was previously unconstrained in this manner.
- (ii) in modifying the context of choice of agents that do not have legal duties under most envisaged emissions trading schemes, but who nonetheless can be expected to experience wellbeing-enhancing and diminishing effects of selecting this method of climate mitigation ahead of its rivals, emissions trading schemes raise wider issues of legitimation from the perspective of typical non-participating legitimacy holders such as individual citizens, households, and civil society groups.
- (iii) to capture the full efficiency benefits of the market-based approach to climate mitigation, emissions trading schemes must either be multi-jurisdictional in origin or be linked through a system of inter-scheme trading procedures. This trans-boundary logic, which can be seen in the greenhouse emissions trading introduced by the Kyoto Protocol (which targets 38 states) and the EU Emissions Trading Scheme (which currently targets 12,000 firms operating within 27 states), complicates considerably the application of traditional accounts of legitimacy. These accounts focus overwhelmingly on questions of legitimacy and procedural justice arising within a single territory or jurisdiction.

### **Political legitimacy and global emissions trading**

Following Buchanan and Keohane, to claim that an institution is legitimate is to claim that it is 'morally justified in making rules and attempting to secure compliance with them' and further that agents 'subject to those rules have moral content-independent reasons to follow them and/or to not interfere with others' compliance

with them'.<sup>14</sup> The key to an institution's legitimacy is thus not merely that relevant agents believe that an institution has the right to rule but also that agents whose conduct is constrained by the relevant rules are motivated by moral reasons to exchange the pronouncements of the institution with their own.<sup>15</sup> An environmental governance response will only be legitimate in this *normative* sense if the agents whose conduct it constrains have moral reasons to conform to, and support publicly, the rules and norms constituting this response independently of their normative evaluation of specific rules and norms. An environmental governance response will be, in addition, *sociologically* legitimate if there is a widespread belief amongst relevant affected agents that the political authority involved has been wielded justifiably.<sup>16</sup>

Although a useful starting-point, the above clarification of normative political legitimacy (hereafter, legitimacy) in the context of environmental governance leaves a number of questions unanswered. The first question concerns the 'site' of legitimacy, that is, to which type of political phenomenon (rules, laws, norms, decisions, or institutions) are analyses of legitimacy meaningfully applied? This question itself has two aspects: first, the identification of the type of phenomenon that is targeted; and, second, the identification of the 'tokens' of this phenomenon type that possess the properties necessary to be normatively legitimate (or illegitimate). I assume here that institutions (understood as 'persisting pattern[s] of organized, rule-governed, coordinated behaviour'<sup>17</sup>) are the primary focus of legitimacy analyses and not the particular decisions, rules, or norms, propagated by these institutions.<sup>18</sup> I also assume that the concept of an institution can be extended to cover environmental governance responses, such as trans-boundary emissions trading schemes, that coordinate the behaviour of different types of atmospheric user over extended time periods and jurisdictions. Such schemes, while not designed to perform the same extended range of functions associated with typical GGIs and GCGIs, propagate legal and social norms; these norms apply across different jurisdictions; and significant rewards (penalties) are attached to agents who fulfil (violate) these norms. As such, emissions trading schemes are far more than a collection of individual rules: they are 'ongoing systems of governance'<sup>19</sup> requiring legitimation in substantially the same way the GGIs and GCGIs to which they are connected.

A second question concerns the 'source' of legitimacy. That is, from whose interests or agency does institutional legitimacy originate? Some accounts of this 'legitimacy holder' question assume that states are the ultimate source of legitimacy of institutions, laws, norms, and rules in the international realm. This might be called the 'statist' approach to international legitimacy. I assume here that it is also meaningful to treat at least some non-state actors (such as individuals, households, or social groups) as legitimacy holders. This approach has become known in the literature as a 'multi-level approach' to international legitimacy.<sup>20</sup>

A third question concerns the 'mode' of legitimacy, that is, whether the focus of evaluations of political legitimacy is on some normatively relevant connection amongst the institution's historical origins, the rules it currently propagates, and

the agents whose behaviour is constrained by these rules ('input-oriented legitimacy') or on the expected utility of the institution and its rules in terms of their contribution to the common good ('output-oriented legitimacy').<sup>21</sup> Here, I focus primarily on the problems of input-oriented legitimacy raised by emissions trading. The reason for this is that such problems have often been neglected due to the overwhelming focus of the literature hitherto on questions of environmental effectiveness and cost efficiency, which are intimately connected to discussions of output-oriented legitimacy.<sup>22</sup>

The complexity of the concept of legitimacy, as demonstrated by the brief analysis of the above three questions, is a serious barrier to its use as a test of the normative attractiveness of GCGIs. I attempt to overcome this barrier in the following by focusing on three 'epistemic qualities' of international legitimacy popularized by Buchanan and Keohane.<sup>23</sup> These qualities are not to be seen as the conditions that GCGIs must possess in order to claim the right to rule per se, but rather the channels through which legitimate GCGIs transmit 'reliable information needed for grappling with normative disagreement and uncertainty concerning [their] proper functions'.<sup>24</sup> If an institution does not generate and sustain these informational channels it will lack an important property of a legitimate institution and will consequently be vulnerable to demands that it be reformed or abolished. The three 'epistemic qualities' in question are participation, accountability, and transparency. It transpires that each of these three mechanisms of legitimacy is threatened in the context of emissions trading.

### ***Participation***

The intrinsic and instrumental value of participation in shaping public policy has been affirmed by contributors to the discourse on democratic thought representing a wide variety of constitutional traditions.<sup>25</sup> The epistemic quality of participation turns on the interests of affected and subjected parties (those agents whose behaviour and interests stand to be modified by a GCGI and its associated policies) playing an active role in climate governance processes. The idea is that, to be legitimate, an institution must not only have a certain historical or constitutional pedigree but also provide legitimacy holders with a continuing sense of ownership over the rules and norms propagated.

In the context of climate governance, the need to promote such 'participatory legitimacy'<sup>26</sup> implies that those agents whose behaviour or condition is modified by climate mitigation policies and measures should have a voice in the way these policies are constructed and implemented.<sup>27</sup> The problem in the present context is that the responsibilities of agents participating in emissions trading schemes are determined on a day-to-day basis by global emissions trading markets (which set the price of emissions allowances) rather than by the decisions of the relevant governmental agencies (which set the periodic emissions caps). There is little room here for non-participants (those agents that are not legally bound to surrender allowances in proportion to their annual CO<sub>2</sub><sup>e</sup> emissions) to

determine the spatial location of mitigation actions, who should perform these actions, or what sort of technology is used. Citizens, civil society groups, and other agents lacking specific legal emissions trading duties, may be involved in the broader process whereby the goals and objectives of GCGIs are formulated. But non-participants can only be said to 'take part' in the emissions trading markets in a rather indirect manner, typically, by experiencing and publicly supporting the rises in the cost of energy, transport, or consumer products that accompany the introduction of emissions trading within a given jurisdiction. This indirectness of participation raises the spectre of a 'participatory legitimacy deficit' unique to this form of climate governance response.

Aside from a fundamental questioning of the value of participation as an epistemic quality of legitimacy, one response to the above concerns is that an emissions trading scheme of global scope could blur the boundary between direct and indirect participation. This is because it permits all legal persons to be buyers or sellers of emissions allowances, even if only a subset of legal persons (large firms or state governments, for example) are allocated legal duties under the scheme. A further, more radical move, would be to assign all legal persons, including individual citizens, legal duties under the global emissions trading scheme. An alternative response asserts that a degree of participation is also evident in inter-state emissions trading schemes since each participating signatory to the UNFCCC has to consent to the introduction of the scheme and its rules and norms for emissions trading to be extended to its territorial CO<sub>2</sub><sup>e</sup> emissions. As signatories to the UNFCCC, moreover, each state would continue to be involved in the broader institution building process through which the rules of emissions trading, including the legal determination of the nature of the emissions allowances generated, are determined. Nonetheless, the lack of direct democratic participation in global greenhouse emissions remains a matter of significant concern for a number of scholars of environmental political theory.<sup>28</sup>

### *Accountability*

To be accountable, Keohane writes, 'is to have one's autonomy and one's power over others, constrained'.<sup>29</sup> For an institution to be accountable, on this view, requires that those agents whose behaviour it constrains are adequately informed of the institution's conduct, and of the reasoning behind its conduct, while also possessing the capacity to sanction the institution for abuse of power or other violation of duty.<sup>30</sup>

The problem in the present context is the global emissions markets appear too diffuse and unpredictable to be fully accountable to regulators and other accountability holders. As we have seen, this type of GCGI relies on the atmospheric users external to the scheme – but whose interests are the basis of the scheme's existence – remaining one step removed from imposing their will on the daily operations of the emissions trading market. Individual citizens and civil society groups, for example, relinquish control over *how*, *where*, and *by whom*, reductions of CO<sub>2</sub><sup>e</sup>

are to be achieved under a climate mitigation response anchored by a global emissions trading scheme. Due to the incorporation of allowance banking and borrowing procedures, moreover, regulators will also have less capacity to scrutinize the rate at which mitigation is occurring than would be the case under a direct regulatory regime. The uncertainties that arise with emissions trading complicate the flow of accountability amongst atmospheric users and regulators since regulators can in principle be subjected to continuous accountability, whereas markets tend to resist such accountability. Put simply, emissions markets may make firms and state participants accountable for the social costs of their CO<sub>2</sub><sup>e</sup> emissions, but emissions markets are not themselves accountable to anyone. Emissions trading schemes, in this way, involve the replacement of democratic forms of accountability with market forms of accountability; and it is unclear how these alternative forms of accountability can be harmonized since they encourage agents to embrace divergent sources of legitimacy.<sup>31</sup>

One response to the accountability concerns articulated above would be to argue that moving effective control of the means of pursuing valued climate governance objectives away from policymaker control or democratic debate is at a deeper level to fulfil, rather than to abandon, a commitment to environmental accountability.<sup>32</sup> Emissions trading schemes, that is, may shift the site of accountability away from scrutinizing the *means* of climate governance towards scrutinizing the *goals* of climate governance. Accountability holders, so the argument goes, could be expected to consent to some loss of control over the 'where', 'how', 'when', and 'by whom', aspects of climate mitigation so long as this would prevent the onset of dangerous or catastrophic climate change. Suppose, by contrast, that measures were taken to make emissions trading more accountable. These measures could have the unintended effect of reducing the environmental effectiveness or cost efficiency of the mitigation effort by complicating the investment decisions of scheme participants or by imposing additional informational costs on both regulators and participants.<sup>33</sup> So the normative implications of the apparent lack of accountability in emissions trading may ultimately turn not only on the appropriate normative weightings of efficiency, effectiveness, and accountability but also the extent to which robust mechanisms of accountability can be nurtured that do not threaten values of efficiency or effectiveness.

### *Transparency*

A common assumption of legitimacy theorists is that, to retain the right to rule, institutions must be sufficiently transparent in their dealings that their performance can be monitored by the agents whose interests and behaviour they modify. In this way, the epistemic quality of transparency, independent of any intrinsic value it might be thought to possess, has instrumental value in terms of the way it promotes participation and accountability.<sup>34</sup> There are three key aspects of transparency worth mentioning in the present context.<sup>35</sup> First, accurate information must be

available to users, at reasonable cost, concerning an institution's goals, procedures, and performance. Second, information must be accessible in the sense that there are no significant cognitive barriers in the way of a typical legitimacy holder comprehending, and hence acting upon, this information. Moreover, the institution must make genuine attempts to disclose information to help accountability holders scrutinize its operations, rather than merely responding to requests for information as and when these arise. Third, the end-users of this information must be in a situation where they are able and motivated to draw upon it as part of an ongoing programme of criticism and reform of the institutions to which they are subject.

It is immediately obvious that emissions trading could be criticized for its performance in terms of all three of the above dimensions of transparency. A feature of emissions trading, for example, is the degree of complexity and impenetrability at the heart of global emissions markets even for those users with a nuanced understanding of emissions markets. This complexity (which arises, *inter alia*, from the diversity of rules overseeing the transfer, banking, borrowing, and accounting of allowances valid for use within the scheme) hinders authorized participants from making rational decisions about their duties under the system. As Lohmann could claim justifiably of the EU Emissions Trading Scheme in 2006, which is smaller and less complex than any plausible global scheme could hope to be, 'not even many journalists covering climate know what's going on'.<sup>36</sup>

Although the general case for a transparency deficit at the heart of emissions trading is hard to fault, two counter-responses suggest that the extreme form of the transparency objection – which maintains that emissions allowance trading is opaque to most atmospheric users and therefore illegitimate – is far from decisive. First, it seems a plausible claim that accountability holders, whether or not they have legal duties under any emissions trading regime, would have good reason to support any climate mitigation response that (i) does not involve widespread human rights violations, (ii) could be expected to reduce annual global emissions of CO<sub>2</sub><sup>e</sup> and (iii) is open to democratic scrutiny and reform in terms of the speed in which this response is implemented. The transparency gaps noted above do not seem extensive enough to threaten any of these three normative constraints. Second, the 'cap' aspect of 'cap-and-trade' is in principle open to scrutiny of large numbers of atmospheric users even if the 'trade' aspect is less than fully transparent. It is worth noting in this respect that emissions trading is consistent with measures that 'name and shame' heavy emitters as well as extensive monitoring of the emission trading markets to help prevent fraud or other procedural abuses that could reduce public confidence in the climate mitigation response. Emissions trading schemes are also, in a certain sense, a model of transparency in that the current, and projected, price that each participating user must pay for emitting a tonne of CO<sub>2</sub><sup>e</sup> are publicized in the same manner as the prices of stocks, etc.

Nevertheless, the transparency objection, even if not decisive against all possible forms of emissions trading, suggests that regulators should seek to simplify

these schemes as far as is practicable, if their aim is to secure high levels of socio-logical legitimacy amongst participants and non-participants.

### **Procedural justice and emissions trading**

While political legitimacy concerns the rightful exercise of constitutional authority, procedural justice concerns normative qualities of decision-making within and beyond the context of constitutional authority. An analysis of emissions trading through the lens of procedural justice is useful since it could be maintained that the non-distributive normative problems associated with emissions trading are not exhausted by considerations of legitimacy. Thus, following John Rawls, it can be said that procedural justice presents a standard for the normative justification of social institutions that is not reducible to considerations of legitimacy.<sup>37</sup> Accounts of procedural justice, in turn, are not restricted to the evaluation of historical features of institutions, such as their constitutional pedigree, widely held to deliver content-independent reasons to obey institutional norms and rules. Instead, such accounts typically extend to more controversial questions of procedure that cannot be settled without scrutinizing the content of particular rules, norms or decisions. Asserting that emissions trading schemes, or the markets they facilitate, are illegitimate would not necessarily commit one to the wider claim that such schemes are both illegitimate and procedurally just. The normative space is available, that is, for the view that emissions trading schemes may have the procedural qualities necessary to serve as components of a robust global climate governance response despite being flawed from the perspective of political legitimacy.

Procedural justice has two basic elements: impartiality and equality of opportunity.<sup>38</sup> According to the principle of impartiality, political institutions and the policies they systematize must not depart from pre-established formalities, rules, and procedures. Procedural justice in this sense is realized in emissions trading when the same rules of trading and compliance are applied to all authorized participants, and when the rules separating participants from non-participants are free of arbitrariness or obvious bias. According to the principle of equality of opportunity, the initial condition of those bound by common institutions should be roughly equal in terms of their ability to understand the procedures involved, and those bound should also face roughly equal opportunities and costs of compliance. Equality of opportunity is realized in emissions trading, then, when participants do not experience inequality in their ability to exploit the legitimate benefits or in their ability to fulfil the obligations of participation as a result of weak agency or some other arbitrary feature of their situation.

Although a number of procedural injustices plagued the negotiation and implementation phases of schemes such as those introduced by the Kyoto Protocol,<sup>39</sup> I focus here on the *ideal-theoretic* question of whether a global emissions trading scheme devoid of obvious bias and regulatory incompetence could be reconciled with norms of impartiality and equal opportunity. Three issues of

concern, which overlap to a certain extent with our earlier treatment of political legitimacy, are the following: complexity, inequality, responsibility.

### ***Complexity***

Although the basic economics behind emissions trading – that abatement should take place at its least costly location – is a relatively simple idea to grasp, the day-to-day reality of emissions trading schemes is one of great complexity. While such schemes are designed to be impartial in the sense that each and every atmospheric user with legal duties under the scheme are permitted to offset their emissions by purchasing allowances according to pre-specified rules, they also introduce intricate systems of rules governing the trade, banking, borrowing, and accounting, of emission allowances. These rules cannot possibly be grasped at the same level of comprehension by all participants. A *global* emissions scheme would also be accompanied by additional complexities of scale such as the presence of multiple allowance types (such as voluntary, credit-and-baseline, and cap-and-trade allowances) and trading platforms (where these different types of allowance are traded in different parts of the world).

The level of the complexity involved in multi-jurisdictional emissions trading schemes could be expected to undermine the ability of agents with legal duties under the scheme to know if the relevant procedures are being implemented fairly. It could also be expected to place an upper limit on the democratic oversight capacity of regulators and atmospheric users external to the scheme. In terms of equality of opportunity within the scheme, the complexities of a global system of emission trading markets virtually guarantees that participants will experience undeserved inequality in confronting the uncertainties associated with emissions markets. Many participants, for example, may be unable to make accurate predictions about the price and availability of allowances. They will as a consequence incur inequalities of opportunity that do not plague rival environmental governance responses that set a fixed price for each tonne of emitted CO<sub>2</sub><sup>c</sup> or specify legal emissions limits. Although emissions trading schemes can be made less complex by reducing the number of active participants and restricting the number of emissions allowance types and trading platforms, this type of climate governance response is certainly more complex than many rivals and its implementation therefore raises at least some unique problems of procedural justice.

### ***Inequality***

Emissions trading introduces some subtle changes in the relationships amongst atmospheric users as a result of unequal initial endowments of scheme participants. Let us assume that the authorized allowances in a future global trading scheme were allocated amongst the 195 governments party to the UNFCCC such that each state, in the first year of the scheme, received two allowances per citizen. This would reflect the judgement of regulators that a safe level of global

greenhouse emissions for the following year would be equivalent to two tonnes of CO<sub>2</sub><sup>e</sup> per person living in the world during this year. According to this initial allocation rule, low-emitting states would initially receive far more allowances than they predictably require to discharge their duties under the scheme. High-emitting states, by contrast, would receive far fewer allowances than they predictably require to discharge their duties under the scheme. To achieve the cost efficiencies associated with theoretical treatments of emissions offsetting, the regulators of this scheme would then encourage international trade in emissions allowances. Wealthy, high-emitting states would be expected to purchase emissions allowances from poorer, low-emitting states, rather than undertake additional mitigation action within their own territories. This is particularly likely in the early years of the scheme when the price for each emissions allowance is likely to be lower. The international circulation of allowances is a predictable, and economically desirable, extension of the core ethos of emissions trading to facilitate the flow of allowances from those valuing them least to those valuing them most in economic, rather than moral or developmental, terms. The normative problem that such a scheme raises is that it expresses inequality of opportunity, since rich and poor participants could not possibly participate in such a scheme on fair and equal terms. The former can use their resources to entice the latter into sacrificing long-term development goals for the short-term capital gains associated with selling spare emissions allowances. This process of inequality has been called 'carbon colonialism', the label reflecting the idea that poor participants, in this case developing states, are encouraged to sell allowances early on in the scheme's history only to be forced to buy allowances at a far higher price later in the scheme's history when they need to emit more CO<sub>2</sub><sup>e</sup> to meet their development goals.<sup>40</sup>

The spectre of carbon colonialism raises a number of normative problems, but the distinctive procedural concern is that the emissions markets will reinforce existing inequalities of bargaining power amongst participating atmospheric users and thereby express procedural injustice in the way it treats the participants. One aspect of the problem is that wealthier participants may secure allowances on more favourable terms than impoverished users solely due to the information and arbitrage opportunities that accompany their superior wealth.<sup>41</sup> A second aspect is that many less wealthy participants (in the case above, developing states) may find themselves in a situation where they cannot afford not to sell their allowances to wealthier, higher emitting states. As such they may feel deprived of the option of *retiring* (that is, destroying) allowances in protest against the greenhouse profligacy of the developed world. Although emissions trading schemes could be modified to reduce such inequalities of opportunity, often by charging developed states for their initial allocation of emissions allowances and transferring the income gained to developing states or by exempting some states from any emissions reductions responsibilities, this type of climate governance response is inherently tilted in favour of resource-rich participants due to the simple logic of offsetting.

### **Responsibility**

‘Responsibility’, Miller observes, ‘is one of the most slippery and confusing terms in the lexicon of moral and political philosophy’.<sup>42</sup> Much of the confusion flows from the large number of possible interpretations and applications of the concept. One common source of confusion is that responsibility has both a consequentialist and a non-consequentialist meaning. ‘Consequentialist responsibility’ mandates the assignment of responsibility amongst moral agents that will predictably bring about the best outcome for some population. Hepburn and Stern provide a typical statement of the climatic governance application of this meaning of responsibility when they write that ‘[t]aking responsibility implies paying for the emission reductions – it is less relevant whether the emission reductions occur within a particular national territory’.<sup>43</sup> ‘Non-consequentialist responsibility’, by contrast, mandates the assignment of responsibility amongst moral agents that correctly expresses their equal dignity and rights. In the climate governance context, this means that mitigation responsibilities should be distributed so as to respect the rights possessed by states and other categories of atmospheric user, and not merely to realize a preferred pattern of resource or welfare amongst them.

Put simply, the non-consequentialist responsibility-based objection to emissions trading is that the norms and rules propagated violate the principle that all agents should avoid damaging the environment in their own daily activities rather than pay others to do this on their behalf.<sup>44</sup> The problem here is not merely the potentially adverse long-term consequences associated with adopting emissions trading as the structure within which atmospheric users are encouraged to reduce their climatic impact. It is also that providing the institutional conditions necessary for the inter-state transfer of mitigation duties is *intrinsically* unjust. This is because such schemes fail to treat agents as equals whose wrongdoing should be communicated to them and met with appropriate penalties rather than with financial offsetting opportunities. For all atmospheric users, the scheme would amount to an affirmation of the norm that atmospheric users should expect to receive monetary payment in exchange for actions that these agents should perform anyway, namely, the reduction of the amount of CO<sub>2</sub><sup>e</sup> they emit in their daily activities. A further aspect of the responsibility objection is that many exchanges of allowances will not only take place between agents with legal duties under the scheme but also between third parties such as brokers, investors, or hedge funds. This raises not only the transparency and complexity problems outlined above, but also the concern that profit-making opportunities for intermediaries will become available that would be unavailable under rival climate governance responses, such as carbon taxes or direct government regulation.<sup>45</sup>

What should we make of this responsibility-based objection to emissions trading? It appears that at least some of the conflict of motives at the heart of the objection can be mitigated in the policy design and implementation process. Public information campaigns might be constructed that explain the efficiency

benefits of emissions trading (*how* we reduce carbon footprint at least social cost) while simultaneous attempts are made to emphasize the human and non-human value of a climate-system in equilibrium (*why* we should protect the climate system from change). In this way, emissions trading might become valued as a conduit for responsible, rather than irresponsible, environmental behaviour just as demanding a high monetary price for the right to use a public resource such as a museum or public park can sometimes be an effective, as well as responsibility-affirming, method of protect valuable social resources.<sup>46</sup>

One problem with this accommodatory response is that even if the technical condition of 'dangerous climate change' has yet to be reached, recent research indicates that the threshold at which *any* further human-originating CO<sub>2</sub><sup>e</sup> emissions must be viewed as harmful has already been passed.<sup>47</sup> If this research is accurate it seems that emissions trading markets cannot be seen as institutions through which responsibilities for addressing avoidable environmental catastrophe are shifted harmlessly around the globe for the sake of economic efficiency. They are, in fact, tantamount to a global network of rules and norms regulating the exchange of packages of future disadvantage, death, and disease. It may be stretching credulity to conceive of emissions trading participants as buyers and sellers of 'licenses to kill'. Yet, emissions trading is uncomfortably at odds with the idea that, until the storage and sink capacity of the climate system can be restored to a safe level, all agents should make strenuous efforts to reduce their CO<sub>2</sub><sup>e</sup> emissions in their daily activities even if other agents could reduce the same amount of emissions at a lesser cost.

## Conclusion

Nicholas Stern famously refers to anthropogenic climate change as 'the greatest market failure the world has ever seen'.<sup>48</sup> This article has asked whether a governance response to this failure based on a global network of emissions trading markets would be ethically desirable even if their proponents were correct in thinking that this form of market-environmentalism is superior to rival governance responses in terms of environmental effectiveness and cost efficiency. Whilst the areas of normative weakness developed in the text were not shown to deal a decisive blow to emissions trading, taken in combination they suggest that emissions trading schemes must be subjected to a programme of reform and revision if they are to secure the public support typically achieved by institutions and policies perceived as politically legitimate and procedurally just. This programme of reform and revision is particularly urgent in the context of democratic states, I would argue, due to the critical role that public support plays in the selection and subsequent implementation of environmental policies in these states. Although the inquiry has focused almost exclusively on the normative evaluation of emissions trading, it seems likely that rival governance responses will also be susceptible, in modified form, to challenges of political legitimacy and procedural justice. What is unique to emissions trading is the injection of a profound market exchange

dynamic into global climate governance with highly uncertain implications for moral relations amongst existing and future users of the atmosphere.

### Acknowledgements

I would like to thank Clare Heyward, Ludvig Beckman, Göran Duus-Otterström, Dean Machin, and two reviewers from *Democratization*, for their helpful comments and suggestions on an earlier draft of this article.

### Notes

1. Buchanan and Keohane, 'The Legitimacy of Global Governance Institutions', 405–37; Keohane, 'Accountability in World Politics'; Buchanan, *Justice, Legitimacy and Self-Determination*, 289–327; Zürn, 'Global Governance and Legitimacy Problems'.
2. See Bodansky, 'The Legitimacy of International Governance', 611–12; Eckersley, 'Ambushed'; Buchanan, 'The Legitimacy of International Law', 90–4; Paterson, 'Legitimation and Accumulation in Climate Change Governance.'
3. See Bodansky, *International Climate Efforts Beyond 2012*; Aldy and Stavins, *Architectures for Agreement*; Hepburn and Stern, 'A New Global Deal on Climate Change'.
4. See Gupta and Tirpak, 'Policies, Instruments and Co-operative Arrangements', 756–9; Stern, *The Economics of Climate Change*, 349–54; Page, 'Cosmopolitanism, Climate Change, and Greenhouse Emissions Trading', 38–9.
5. See Lazarowicz, *Global Carbon Trading*, 11–19; Linacre, Kossoy and Ambrosi, *State and Trends of the World Carbon Market 2011*, 21–37.
6. See Linacre, Kossoy and Ambrosi, *State and Trends of the World Carbon Market 2011*, 9.
7. See, for example, Huitema et al., 'The Evaluation of Climate Policy', 187–8.
8. For convenience, I use the term 'atmospheric user' as shorthand for all types and tokens of agent that cause climate change where disaggregation is not essential.
9. See Beckerman and Pasek, 'The Morality of Market Mechanisms to Control Pollution'; Caney, 'Markets, Morality and Climate Change'; Láncoš, 'Flexibility and Legitimacy'; Ackerman and Stewart, 'Reforming International Law'.
10. See Baldwin, 'Regulation Lite'; Spash, 'The Brave New World of Carbon Trading'; Lohmann, 'Carbon Trading'; Page, 'Cosmopolitanism, Climate Change, and Greenhouse Emissions Trading'.
11. Linacre, Kossoy and Ambrosi, *State and Trends of the World Carbon Market 2011*, 9, 48.
12. Lazarowicz, *Global Carbon Trading*, 48–50.
13. Tietenberg, *Emissions Trading*, 6–14.
14. Buchanan and Keohane, 'The Legitimacy of Global Governance Institutions', 411; Buchanan, *Justice, Legitimacy and Self-Determination*, 235.
15. Bodansky, 'The Legitimacy of International Governance', 601–2.
16. Paterson, 'Legitimation and Accumulation in Climate Change Governance', 346–7; Lohmann, 'Uncertainty Markets and Carbon Markets'.
17. Buchanan, 'The Legitimacy of International Law', 80. Hodgson writes similarly that institutions are 'systems of established and embedded social rules that structure social interactions' (Hodgson, 'What are Institutions?', 18).
18. See Rawls, *Political Liberalism*, 428; Bodansky, 'The Legitimacy of International Governance', 602.
19. Bodansky, 'The Legitimacy of International Governance', 602.

20. Skjærseth, 'EU Emissions Trading', 296; Paavola, 'Seeking Justice', 312–13.
21. See Scharpf, *Governing in Europe*, 6–21; Skjærseth, 'EU Emissions Trading', 298; Láncoš, 'Flexibility and Legitimacy', 1648; Bodansky, 'Legitimacy', 710–12.
22. See Stern, *The Economics of Climate Change*, 368–92. See also, Huitema et al., 'The Evaluation of Climate Policy', 188.
23. Buchanan and Keohane, 'The Legitimacy of Global Governance Institutions', 424.
24. *Ibid.*, 426.
25. See Held and Harvey, *Democracy, Climate Change and Global Governance*, 8; Christiano, *The Rule of the Many*, 24–5; Rawls, *Political Liberalism*, 431–2; Dworkin, *Is Democracy Possible Here?*, 145–7; Bodansky, 'Legitimacy', 717–8.
26. Bodansky, 'The Legitimacy of International Governance', 617.
27. Paavola, 'Seeking Justice', 314.
28. See Baldwin, 'Regulation Lite', 204.
29. Keohane, 'Accountability in World Politics', 14.
30. Schedler, 'Conceptualizing Accountability', 14–17; Hale, 'Transparency, Accountability and Global Governance', 75–6.
31. Baldwin, 'Regulation Lite', 204–5.
32. Ackerman and Stewart, 'Reforming International Law', 190.
33. Skjærseth, 'EU Emissions Trading', 298.
34. Hale, 'Transparency, Accountability and Global Governance', 73–4.
35. Buchanan and Keohane, 'The Legitimacy of Global Governance Institutions', 427–8; Held and Hervey, *Democracy, Climate Change and Global Governance*, 8; Hale, 'Transparency, Accountability, and Global Governance', 75–6; Schedler, 'Conceptualizing Accountability', 14–15.
36. Lohmann, 'Carbon Trading', 196.
37. See Rawls, *Political Liberalism*, 427–9; Dworkin, *Is Democracy Possible Here?*, 95–6; Buchanan, 'The Legitimacy of International Law', 81; Buchanan and Keohane, 'The Legitimacy of Global Governance Institutions', 409–10.
38. Barry, *Political Argument*, 97–9.
39. See Grubb, Vrolijk and Brack, *The Kyoto Protocol*, 89–96; Lohmann, 'Carbon Trading', 49–51.
40. Baldwin, 'Regulation Lite', 202–3; Paterson, 'Legitimation and Accumulation in Climate Change Governance', 355.
41. Baldwin, 'Regulation Lite', 201–2.
42. Miller, *National Responsibility and Global Justice*, 82.
43. Hepburn and Stern, 'A New Global Deal on Climate Change', 266.
44. Sandel, 'It's Immoral to Buy the Right to Pollute', 94–5; Goodin, 'Selling Environmental Indulgences', 243–4; Paterson, 'Legitimation and Accumulation in Climate Change Governance', 351.
45. See Goodin, 'Selling Environmental Indulgences', 239–40.
46. Caney, 'Markets, Morality and Climate Change', 204–6.
47. See Rockström et al., 'A Safe Operating Space for Humanity'; Parry, Lowe and Hanson, 'Overshoot, Adapt and Recover'.
48. Stern, *The Economics of Climate Change*, xviii.

### Notes on contributor

Edward A. Page is Associate Professor in Political Theory at the Department of Politics and International Studies, Warwick University, UK. His research interests lie at the intersection of political philosophy, applied ethics, and global environmental change. His recent research has focused on intergenerational justice and climate change, the ethics of global emissions trading, and the problem of distributing equitably the burdens of climate change within and

between states. His work has appeared in journals such as *Environmental Politics*, *International Theory*, *Political Studies*, *Journal of Global Ethics*, and *The Monist*.

## References

- Ackerman, Bruce A., and Richard B. Stewart. 'Reforming International Law: The Democratic Case for Market Incentives'. *Columbia Journal of International Law* 13, no.1 (1987–1988): 171–99.
- Aldy, Joseph. E., and Robert N. Stavins. *Architectures for Agreement: Addressing Global Climate Change in the Post-Kyoto World*. Cambridge: Cambridge University Press, 2008.
- Baldwin, Robert. 'Regulation Lite: The Rise of Emissions Trading'. *Regulation and Governance* 2, no. 2 (2008): 193–215.
- Barry, Brian. *Political Argument: A Reissue with a New Introduction*. Berkeley, CA: University of California Press, 2002.
- Beckerman, Wilfred, and Joanna Pasek. 'The Morality of Market Mechanisms to Control Pollution', *World Economics* 4, no. 3 (2003): 191–207.
- Bodansky, Daniel. *International Climate Efforts Beyond 2012: A Survey of Approaches*. Arlington, VA: Pew Centre on Global Climate Change, 2004.
- Bodansky, Daniel. 'Legitimacy'. In *The Oxford Handbook of International Environmental Law*, ed. Daniel Bodansky, Jutta Brunnée and Ellen Hey, 704–23. Oxford: Oxford University Press, 2007.
- Bodansky, Daniel. 'The Legitimacy of International Governance: A Coming Challenge for International Environmental Law?' *American Journal of International Law* 93, no. 3 (1999): 596–624.
- Buchanan, Allen. *Justice, Legitimacy and Self-Determination: Moral Foundations for International Law*. Oxford: Oxford University Press, 2004.
- Buchanan, Allen. 'The Legitimacy of International Law'. In *The Philosophy of International Law*, ed. Samantha Beeson and John Tasioulas, 79–96. Oxford: Oxford University Press, 2010.
- Buchanan, Allen, and Robert Keohane. 'The Legitimacy of Global Governance Institutions'. *Ethics and International Affairs* 20, no. 4 (2006): 405–37.
- Caney, Simon. 'Markets, Morality and Climate Change: What, if Anything, is Wrong with Emissions Trading'. *New Political Economy* 15, no. 2 (2010): 197–224.
- Christiano, Thomas. *The Rule of the Many*. Boulder, CO: Westview Press, 1996.
- Dworkin, Ronald. *Is Democracy Possible Here?* London: Princeton University Press, 2006.
- Eckersley, Robin. 2007. 'Ambushed: The Kyoto Protocol, the Bush Administration's Climate Policy and the Erosion of Legitimacy'. *International Politics* 44, no. 3 (2007): 306–24.
- Goodin, Robert E. 'Selling Environmental Indulgences'. In *Debating the Earth*, ed. John Dryzek and David Schlosberg, 237–54. Oxford: Oxford University Press, 1998.
- Grubb, Michael, Christian Vrolijk, and Duncan Brack. *The Kyoto Protocol: A Guide and Assessment*. London: Royal Institute of International Affairs, 1999.
- Gupta, Sujata, and Dennis A. Tirpak. 'Policies, Instruments and Co-operative Arrangements'. In *Climate Change 2007: Mitigation*, ed. Bert Metz, 745–807. Cambridge: Cambridge University Press, 2007.
- Hale, Thomas N. 'Transparency, Accountability and Global Governance'. *Global Governance* 14, no. 1 (2008): 73–94.
- Held, David, and Angus Hervey. *Democracy, Climate Change and Global Governance: Democratic Agency and the Policy Menu Ahead*. London: Policy Network, 2009.
- Hepburn, Cameron, and Nicholas Stern. 'A New Global Deal on Climate Change'. *Oxford Review of Economic Policy* 24, no. 2 (2008): 259–79.

- Hodgson, Geoffrey M. 'What are Institutions?' *Journal of Economic Issues* 40, no. 1 (2006): 1–25.
- Huitema, David, Andrew Jordan, Eric Massey, Tim Rayner, Harro Van Asselt, Constanze Haug, Roger Hildingsson, Suvi Monni, and Johannes Stripple. 'The Evaluation of Climate Policy: Theory and Emerging Practice in Europe'. *Policy Sciences* 44 (2011): 179–98.
- Keohane, Robert O. 'Accountability in World Politics'. In *The Illusion of Accountability in the European Union*, ed. Sverker Gustavsson, Christer Karlsson and Thomas Persson, 114–22. London: Routledge, 2009.
- Láncos, Petra L. 'Flexibility and Legitimacy – The Emissions Trading System Under the Kyoto Protocol'. *German Law Journal* 9, no. 11 (2008): 1625–51.
- Lazarowicz, Mark. *Global Carbon Trading: A Framework for Reducing Emissions*. London: TSO, 2009.
- Linacre, Nicholas, Alexandre Kossoy, and Philippe Ambrosi. *State and Trends of the World Carbon Market 2011*. Washington, DC: World Bank, 2011.
- Lohmann, Larry. 'Carbon Trading: A Critical Conversation on Climate Change, Privatisation and Power'. *Development Dialogue* 48 (September 2006): 1–359.
- Lohmann, Larry. 'Uncertainty Markets and Carbon Markets: Variations on Polanyian Themes'. *New Political Economy* 15, no. 2 (2010): 225–54.
- Miller, David. *National Responsibility and Global Justice*. Oxford: Oxford University Press, 2007.
- Paavola, Jouni. 'Seeking Justice: International Environmental Governance and Climate Change'. *Globalizations* 2, no. 3 (2005): 309–22.
- Page, Edward A. 'Cosmopolitanism, Climate Change, and Greenhouse Emissions Trading'. *International Theory* 3, no. 1 (2011): 37–69.
- Parry, Martin, Jason Lowe, and Clare Hanson. 'Overshoot, Adapt and Recover'. *Nature* 458 (April 2009): 1102–3.
- Paterson, Matthew. 'Legitimation and Accumulation in Climate Change Governance'. *New Political Economy* 15, no. 3 (2010): 345–68.
- Rawls, John. *Political Liberalism: Expanded Edition*. New York: Columbia University Press, 2005.
- Rockström, J., Will Steffen, Kevin Noone, Åsa Persson, F. Stuart Chapin, III, Eric F. Lambin, Timothy M. Lenton et al. 'A Safe Operating Space for Humanity'. *Nature* 461 (September 2009): 472–5.
- Sandel, Michael. 'It's Immoral to Buy the Right to Pollute'. In *Public Philosophy: Essays on Morality in Politics*, ed. Michael Sandel, 93–6. Cambridge: Harvard University Press.
- Scharpf, Fritz. *Governing in Europe: Effective and Democratic*. Oxford: Oxford University Press, 1999.
- Schedler, Andreas. 'Conceptualizing Accountability'. In *The Self-Restraining State: Power and Accountability in New Democracies*, ed. Andreas Schedler, Larry Diamond and Marc F. Plattner, 13–28. London: Lynne Rienner, 1999.
- Skjærseth, Jon B. 'EU Emissions Trading: Legitimacy and Stringency'. *Environmental Policy and Governance* 20, no. 5 (2010): 295–308.
- Spash, Clive. 'The Brave New World of Carbon Trading'. *New Political Economy* 15, no. 2 (2010): 169–96.
- Stern, Nicholas. *The Economics of Climate Change: The Stern Review*. Cambridge: Cambridge University Press, 2007.
- Tietenberg, Thomas H. *Emissions Trading: Principles and Practice*. 2nd ed. Washington, DC: Resources for the Future, 2006.
- Zürn, Michael. 'Global Governance and Legitimacy Problems'. *Government and Opposition* 39, no. 2 (2004): 260–87.