

Trade Policies and Climate Change:

Border Carbon Adjustments as a Tool for a Just Global Climate Regime

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Abstract

There is an urgent need to mitigate global greenhouse gas emissions. Because climate change is caused by actions regardless of where they take place on earth, it is generally considered that effective action must take place on a global scale. So far, multilateral attempts to coordinate action on a global level have failed to implement measures that are expected to prevent dangerous climate change, and unilateral measures are now being considered as an alternative way of achieving emissions reductions outside of this context. In light of this, some advocate the use of Border Carbon Adjustments to address the various problems that arise when carbon mitigation policies are implemented on a unilateral basis. There are several arguments for or against the use of Border Carbon Adjustments, and most of these are addressed in the economic, legal, and policy literature. Little has been said on the implications of Border Carbon Adjustments for justice. The aim of this paper is to evaluate Border Carbon Adjustments as a policy tool for the mitigation of climate change. This paper argues that, whilst Border Carbon Adjustments may be an effective way of achieving unilateral emission reductions, they face problems as far as global distributive justice is concerned and they can easily be perceived as an unacceptable shift towards a hostile and aggressive form of multilateral diplomacy. For this reason, Border Carbon Adjustments should be viewed with great caution and, if used at all, careful attention should be paid to designing their implementation in accordance with principles of justice.

I. Introduction

Climate change is a problem that requires urgent action on a global scale and thus presents us with questions of global justice. Most of the world's nation states have agreed to undertake measures to stabilize the atmospheric concentration of greenhouse gases at a level that avoids dangerous climate change.¹ At the same time, it is increasingly apparent that this goal will not be met unless immediate action is taken to reduce global emission levels.² Because emissions contribute to the atmospheric concentration of greenhouse gases regardless of where they are emitted, climate change mitigation is often characterised as a collective action problem that requires coordination on a global scale and a scheme for fairly sharing

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1 United Nations Framework Convention on Climate Change (1992) Article 2. For a discussion of what constitutes 'dangerous' climate change, see: *Clare Heyward*, *Environment and Cultural Identity: Towards a New Dimension of Climate Justice* (2010).

2 IPCC Fourth Assessment Report: Climate Change (2007); IEA World Energy Outlook (2011); OECD Environmental Outlook to 2050: The Consequences of Inaction (2012). An agreement that climate change should not exceed 2°C above preindustrial levels is one of the outcomes of the Copenhagen Accord (2009). This is repeated in the Cancun Agreements (2010), and the Durban Platform (2011).

the burdens associated with the necessary action. For this reason, the international community has created the United Nations Framework Convention on Climate Change (UNFCCC), which is a comprehensive treaty designed to coordinate action on climate change. Yet, so far, the member states of the UNFCCC have struggled to achieve meaningful action on climate change,³ leading many to explore options for pursuing climate change policy outside of the traditional comprehensive approach, where policy measures are achieved unilaterally. However, whilst allowing an alternative tract to achieve climate mitigation options when comprehensive agreement is not forthcoming, implementing emissions reduction policies in situations of partial compliance is far from unproblematic. In light of this, some authors advocate the use of Border Carbon Adjustments (BCAs) to address the various problems that arise when carbon mitigation policies are implemented on a unilateral basis. BCAs are, however, not without their disadvantages and in this text we aim at evaluating the arguments for and against this policy instrument from the perspective of justice.

In a broader context, BCAs are a response to the problems that arise when different policy areas emerge at the global level at different points in time. In an ideal sense, the most desirable form of policy measure for addressing climate change would be a universal institutional framework that implemented regulation on a global scale. In the event of partial compliance in such a regulatory framework, BCAs represent a second best, or non-ideal alternative to achieving emissions reductions. At the same time, BCAs also have important consequences for other areas of international cooperation, foremost: the international trade regime. In this respect, BCAs are a solution to a global problem (climate change) as part of a subglobal answer (partial compliance in a climate regime) and the fairness and effectiveness of these subglobal solutions is put into question by more globalised areas of human cooperation (international trade).

The paper is structured as follows. Section two introduces the problem of achieving climate change mitigation commitments when states pursue different emission reduction policies and the need for trade measures to address this problem. Section three gives some background on the issue of BCAs and the potential gains from implementing these measures. The fourth section discusses the relative merits of BCAs in the context of three separate issues: compatibility with WTO law, mitigation effectiveness, and practicality. The fifth section then considers the implications of BCAs for global justice and we argue that there is no single, overriding consideration that would determine the outcome of an evaluation of BCAs. The final section makes some policy proposals based on the findings of the paper.

II. Global Climate Change, Unilateral Policy, and Trade

Efforts to develop a climate change regime have so far focussed on achieving a universal, ‘top-down’ regulatory agreement on a global scale. This involves implementing collective action amongst all nation states through a structured institutional authority. Yet the recent negotiations of the UNFCCC suggest that it is unrealistic to expect much success in the near future from this form of multilateral coordination to implement emission reductions.⁴ This has led to proposals for non-comprehensive approaches to climate change mitigation, in which a subset of states implements climate policies outside of the domain of the UNFCCC on an independent basis. Such unilateral policies are, however, beset by grave problems. A stable climate that is conducive to human wellbeing is a classic case of a global public good.⁵

3 See: IPCC Fourth Assessment Report: Climate Change (2007) and IEA World Energy Outlook (2011).

Public goods are characterised by the fact that their consumption is both non-excludable and non-rival. Agents who do not contribute to the provision of the good cannot be prevented from "consuming" the good, and the benefits that one agent receives from the good does not detract from the benefits that others receive. This leads to the free-rider problem: Since no nation can be excluded from benefiting from the climate change mitigation efforts of other nations, it is in every nation's self-interest to free-ride on the efforts of others. If – contrary to self-interest – a nation were actually to implement unilateral emission reductions without corresponding compliance by others, this would lead to problems of both international fairness and effectiveness. These two challenges are particularly significant when unilateral climate policy measures are implemented in the context of simultaneous attempts to liberate constraints on global trade.

Let us look at fairness first. Unilateral policies yield unfair burdens for the "do-gooders" who are willing to lead in climate mitigation even while others avoid taking up their fair share of the burdens. In particularly stark terms, climate policy exhibits a problem structure that is shared by many of today's global challenges: Do those who are willing to play their part in a fair effort-sharing to solve a public goods problem (or any other problem that is to be jointly solved) have a moral duty to do their bit even if others refrain from doing so?⁶ Do they even have to go a step further and "take up the slack" that is left over due to the non-compliance of others? Climate change is a notable example of this type of question because the detrimental effects of non-compliance in taking up one's share of the burden – and, conversely, the beneficial effects of doing even more than one's fair share – do not only affect those whose cooperation to solve the global challenge is at stake but rather it affects third parties, in particular future generations and current members of the global community who can refer to their poverty in order to be exempted from obligations to contribute to the solution. This stands in contrast to the questions of fairness that arise in the context of other global public goods problems: If, for example, countries do not take up their fair share in con-

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- 4 Many argue that the recent COP15 negotiations in Copenhagen (2009) demonstrate the limitations of the UNFCCC process to achieve fair and effective action on climate change. For criticism of the COP15 negotiations, see: *Navroz Dubash*, Copenhagen: Climate of Mistrust, *Economic and Political Weekly* 52 (2009), 8-11, 8; *Harald Winkler/Judy Beaumont*, Fair and Effective Multilateralism in the Post-Copenhagen Climate Negotiations, *Climate Policy* 10 (2010), 638-654, 640. For scepticism of the comprehensive approach to climate change more generally, see: *Gwyn Prins/Steve Rayner*, *The Wrong Trousers: Radically Rethinking Climate Policy*, Institution for Science, Innovation and Society, Oxford (2007); *Gwyn Prins et al.*, *The Hartwell Paper: A New Direction for Climate Policy After the Crash of 2009* (2010); *Robert Faulkner et al.*, *International Climate Policy after Copenhagen: Towards a 'Building Blocks' Approach*, *Global Policy* 1 (2010), 252-262.
 - 5 *Ferenc Toth et al.*, *Decision Making Frameworks*, IPCC Working Group III (2001), 653; *Kirsten Halsnæs et al.*, *Framing issues in Climate Change*, IPCC Working Group III (2007), 127. For a discussion of global public goods, see the collection of chapters in: *Inge Kaul/Isabelle Grunberg/Marc Stern*, *Global Public Goods: International Cooperation in the 21st Century* (New York 1999); and those in *Inge Kaul et al.*, *Providing Public Goods: Managing Globalization* (New York 2003). For specific discussions of climate change as a public good, see: *Christoph Böhlinger*, *The Kyoto Protocol: A Review and Perspectives*, *Oxford Review of Economic Policy* 2 (2003), 451-466; *Marco Grasso*, *Climate Change: the Global Public Good*, Working Paper 75, Department of Economics – Università degli Studi di Milano Bicocca (2004); *Ivo Walliman-Helmer*, *The Republican Tragedy of the Commons – The Inefficiency of Democracy in the Light of Climate Change*, *Ancilla Iuris* (2013), 1-14.
 - 6 *Liam Murphy*, *Moral Demands in Nonideal Theory* (Oxford, 2000); *David Miller*, *Taking Up the Slack? Responsibility and Justice in Situations of Partial Compliance* in: *Carl Knight/Zofia Stemplowska (ed.)*, *Responsibility and Global Justice* (Oxford, 2011); *Sabine Hohl/Dominic Roser*, *Stepping in for the Polluters? Climate Justice under Partial Compliance*, *Analyse & Kritik* 2 (2011), 477-500.

tributing to a stable global order then those who are primarily affected by this inaction are also those whose contribution is at stake. This is not the case with climate change, where the lion's share of the effect of present action and inaction is borne by future generations.

Another feature that distinguishes climate policy from other areas of global cooperation – such as, say, a Universal Postal Union – is the importance of the values at stake. If no countries are willing to provide unilateral leadership in response to the shirking of others in climate policy, basic rights and fundamental goods of future generations are at grave risk rather than only the amenity of letters arriving on time. These two features of global cooperation in climate policy – firstly, that third parties are affected, and, secondly, that they are affected very seriously – lead us to conclude that – from the perspective of global justice – fairness in cooperation should not be given priority over achieving the goal of cooperation in climate policy whereas in other areas of global cooperation it might well be the reverse. The countries that are willing to lead through unilateral climate measures should do so despite the unfairness involved in going ahead alone. The fact that third parties are affected and the fact that they are affected drastically makes it morally imperative that mitigation goals are achieved despite potential unfair distributive implications.

The second problem of relying on unilateral responses to global challenges is the danger of ineffectiveness. Effectiveness is in one sense a problem of fairness as well: ineffective policies fail to prevent climate change and thus fail to bring about justice towards future generations. The concern about the ineffectiveness of unilateral policies is, however, often overstated. Unilateral emission reductions are sometimes portrayed as futile merely because they seem insignificant relative to the overall effort required to achieve the stabilization of greenhouse gas emissions at a safe level. This does of course not imply that they are insignificant in absolute terms. At other times, the scepticism about the effectiveness of unilateral emission reductions is grounded in an overly radical portrayal of climate change as a purely non-linear phenomenon. This would imply that only collective efforts that are sufficient to prevent crossing certain tipping points matter. However, such fundamental scepticism about the effectiveness of unilateral mitigation policies rests on dubious premises.⁷ There are, however, more plausible grounds for questioning the value of unilateral emission reductions: Emission reductions would be futile if they should simply be counteracted by emission increases of free riders outside the regulatory zone. This leads us to the problem of carbon leakage. The IPCC defines carbon leakage as 'the increase in CO₂ emissions outside the countries taking domestic mitigation action divided by the reduction in the emissions of these countries'.⁸ This represents a transfer of emissions from one region to another due to a change in some feature of the two regions. Here, we are specifically interested in policy-induced carbon leakage, which occurs when a change in policy measures causes a change in the relative

7 See *ibid.*; *Avram Hiller*, Climate Change and Individual Responsibility, *The Monist* 94 (2011), 349-368.

8 *Terry Barker et al.*, Mitigation from a cross-sectoral perspective, IPCC Working Group III (2007), 665; for further discussions of carbon leakage, see: *Glen P. Peters/Edgar G. Hertwich*, CO₂ embodied in international trade with implications for global climate policy, *Environmental Science & Technology* 42 (2008); *Julia Reinaud*, Would Unilateral Border Adjustment Measures be Effective in Preventing Carbon Leakage?, in: United Nations Environment Program, *Climate and Trade Policies in a Post-2012 World* (2009), 71-78; *Susanne Droege et al.*, Tackling Leakage in a World of Unequal Carbon Prices, *Climate Strategies Report* (2009); *Susanne Droege*, Do border measures have a role in climate policy? *Climate Policy* 11 (2011), 1185-1190; *Susanne Droege*, Using border measures to address carbon flows, *Climate Policy* 11 (2011), 1191-1201; *Karl Steininger et al.*, Justice and cost effectiveness of consumption-based versus production-based approaches to the case of unilateral climate policies, *Global Environmental Change* (2014), 75-87.

distribution of emissions between different policy areas.⁹ For example, domestic policies to implement carbon mitigation measures are likely to increase the cost of production activities that generate emissions within the policy zone. This creates incentives for production activities to shift from the policy zone to unregulated areas in response to the mitigation measures.¹⁰ In this way, the increase in emissions in the non-policy region caused by policy-induced leakage is triggered by the mitigation policy itself. Carbon leakage in this sense only arises when there are differential regulatory policies across different regions. In a situation of full compliance in a universal regulatory agreement this form of carbon leakage would not occur. The problem of carbon leakage is a serious concern for any state or policy area attempting to implement mitigation measures on a unilateral basis. It could mean that its own efforts at protecting the climate have nothing more than symbolic value.

The problem of carbon leakage arises when states undertake different emissions reduction commitments and when emissions producing activities can relocate to unregulated policy areas. Yet this problem also depends on the existence of open trade between different policy areas. Carbon leakage occurs due to the fact that a good can be produced in one region (which is outside of the regulatory zone), yet consumed in another (the policy zone). If the production of a good involves carbon emissions, then the carbon can be labelled 'embodied' in that good.¹¹ The proportion of carbon embodied in imports and exports varies significantly between different countries. Historically, the amount of carbon exported and imported between different states was largely the same: there was not a lot of trade in goods embodying carbon. Recently, however, the amount of carbon embodied in international trade has grown substantially.¹² This represents the increase in carbon leakage across different policy regions, as the trade in carbon embodied goods relates to the relocation of production activities from one region to another. In this sense, carbon leakage is also dependent on liberal trade measures across different regions and, given that the objective of the international trade regime is to remove barriers to trade, the problem of carbon leakage represents a trade-off between the different objectives of free trade and climate mitigation. In this sense, free trade exacerbates the potential of unilateral climate policies to yield results that are unfair and ultimately ineffective. If companies can easily evade the unilateral mitigation policies of first movers by relocating and subsequently exporting their goods into the countries that attempt unilateral mitigation, then unilateral action is additionally discouraged.

9 This is the definition for 'strong', 'direct', 'policy-induced' carbon leakage, i.e. carbon leakage due to mitigation policies. However, production of emissions is currently shifting to the South not only due to climate policy but also due to further factors such as lower labor costs. The flow in embodied emissions, that would occur even without differing climate policies, is captured by such labels as "weak", "indirect", or "consumption-induced" carbon leakage.

10 Besides the change in relative competitiveness of regulated and unregulated policy areas, there are various further 'channels' through which carbon leakage can occur, in particular prices on the energy market, relative changes in income and technology spillover, see: *Karl Steininger et al.*, Justice and cost effectiveness of consumption-based versus production-based approaches to the case of unilateral climate policies, *Global Environmental Change* (2014), 75-87.

11 *Glen Peters/Edgar Hertwich*, CO2 embodied in international trade with implications for global climate policy, *Environmental Science & Technology* 42 (2008); *Satoshi Nakano et al.*, The Measurement of CO2 Embodiments in International Trade: Evidence from the Harmonised Input-Output and Bilateral Trade Database, *OECD Science, Technology and Industry Working Papers* 3 (2009).

12 Note that it is unclear why there has been an increase in carbon embodied in trade at the global level. This might be a response to different policy measures, but this might also be a response to changing production methods and comparative advantages in manufacturing. Determining the exact reason for this shift in trade is not essential for our analysis here.

Given such problems of free riding and carbon leakage, authors are increasingly aware that trade policies are an inevitable feature of achieving emissions mitigation in situations of partial compliance or differential commitments in a policy regime.¹³ Fair and effective unilateral climate policies cannot avoid taking trade into account. This is where Border Carbon Adjustments (BCAs) enter the scene. They are one possible trade measure that can address carbon leakage and competitiveness concerns whilst also addressing the free rider problem by promoting participation and compliance in a global climate treaty. The supposed promise of BCAs consists in diminishing the potential of unilateral climate policy to result in globally unjust outcomes that are, in addition, ineffective at mitigating climate change and thus also intergenerationally unjust.

III. Border Carbon Adjustments

The term BCAs refers to a number of policy measures that focus on applying climate policy to imports and exports and thereby adjusting the differential costs for consumers and producers in countries with different climate policies.¹⁴ These are trade policy measures that extend a domestic carbon policy to traded goods.¹⁵ In general, BCAs include three types of measures: (i) border taxes; (ii) mandatory emissions allowance purchase by importers; and (iii) product standards for embodied carbon.¹⁶ BCAs are advocated as a remedy for several different problems, and the implications of BCAs depend on the motivation for imposing this policy measure. In general, there are three main motivations for implementing BCAs.¹⁷

First, BCAs protect domestic industries from competitive disadvantages due to disparities in carbon policy measures across different regions.¹⁸ In this sense, the motivation for implementing BCAs relates to the protection of domestic industry from foreign competition rather than to environmental objectives.¹⁹ Because carbon mitigation measures place burdens on those producers within a certain policy zone, a producer in a state implementing a domestic carbon policy has a competitive disadvantage in comparison to those that do not implement the same policy. In this way, BCAs are said to ‘level the playing field’ between produc-

13 *Stephanie Monjon/Philippe Quirion*, A border adjustment for the EU ETS: reconciling WTO rules and capacity to tackle carbon leakage, *Climate Policy* 11 (2011), 1212-1225; *Susanne Droege*, Using border measures to address carbon flows, *Climate Policy* 11 (2011), 1191-1201, 1192.

14 *Nathalie Bernasconi-Osterwalder/Johannes Norpoth*, Is world trade law a barrier to saving our climate? http://www.ciel.org/Publications/ClimateTradeReport_foee-ciel_sep09.pdf (2009), last access: 22 July 2014, 21; *Sarah Davidson Ladly*, Border carbon adjustments, WTO-law and the principle of common but differentiated Responsibilities, *International Environmental Agreements: Politics, Law and Economics* 12 (2011), 63-84.

15 *Dieter Helm et al.*, Trade, climate change and the political game theory of border carbon adjustments, *Oxford Review of Economic Policy* 28 (2012), 368-394.

16 *Ibid.* For definition and discussion of border tax adjustments more generally, see: *Gavin Goh*, The World Trade Organization, Kyoto and Energy Tax Adjustments at the Border, *Journal of World Trade* 38 (2004), 395-424, 398.

17 *Nathalie Bernasconi-Osterwalder/Johannes Norpoth*, Is world trade law a barrier to saving our climate? http://www.ciel.org/Publications/ClimateTradeReport_foee-ciel_sep09.pdf (2009), last access: 22 July 2014, 22; *Susanne Droege*, Tackling leakage in a world of unequal carbon prices, *Climate Strategies Report* (2009); *Clara Brandi*, International Trade and Climate Change: Border Adjustment Measures and Developing Countries, *German Development Institute Discussion Paper* 11 (2010).

18 *Olav Schram Stokke*, Trade Measures and Climate Compliance: Institutional Interplay between WTO and the Marrakesh Accords, *International Environmental Agreements: Politics, Law and Economics* 4 (2004), 339-357.

19 *Jacob Werksman*, How Should a Post-2012 Climate Agreement Address Trade-Related Environmental Measures?, *Climate and Trade Policies in a Post-2012 World* (2009), 27-33.

ers in different policy areas because they equalize the cost of greenhouse gas reduction efforts between producers.²⁰ Avoiding such competitive disadvantage can be seen as motivated by both, national self-interest and a concern for international fairness.

Second, BCAs contribute to the prevention of carbon leakage, thereby increasing the overall effectiveness of an emission reduction policy imposed on a unilateral basis. By placing a tax on the imports of carbon embodied in goods, BCAs limit incentives for domestic industries to relocate to areas outside of the regulatory zone. BCA measures therefore help ensure the effectiveness of unilateral policy measures by changing the terms of trade with those countries that are outside of the policy zone.²¹ As demonstrated in the previous section, addressing carbon leakage should improve the overall effectiveness of climate policy.

Third, trade measures such as BCAs are often advocated as mechanisms to ensure participation and compliance with an international regime.²² Indeed, multilateral environmental agreements such as the Convention on International Trade in Endangered Species and the Basel Convention use trade restrictions for this purpose.²³ The role of BCAs in influencing the incentives that states face is twofold. On the one hand, BCAs act to change the incentives of initially agreeing to participate in a climate treaty by creating a situation in which it is more desirable for a state to participate in the treaty.²⁴ A state may be unwilling to join a treaty for numerous reasons, for instance it may raise concerns of international fairness against undertaking commitments without other states do so as well. Alternatively, a state may be reluctant to undertake any mitigation commitments at all because it prioritises its own economic growth above all other considerations. In either of these cases, the adoption of BCAs into a multilateral regime will increase the likelihood of participation by a state that is reluctant to join an agreement.

On the other hand, BCAs can also act as a potential enforcement measure that can incentivise those states that are part of the treaty to continue to comply with its provisions and requirements.²⁵ Because there is no global authority for enforcing compliance with the provisions of international agreements, states have few incentives (apart from a self-imposed concern for global justice and for the rule of law) to comply with the substantive provisions and

20 *Clara Brandi*, *International Trade and Climate Change: Border Adjustment Measures and Developing Countries*, German Development Institute Discussion Paper 11 (2010).

21 *Pamela Chasek/David Downie/Janet Brown*, *Global Environmental Politics* (Boulder, 2006), 247.

22 For discussion, see: *Scott Barrett/Robert Stavins*, *Increasing Participation and Compliance in International Climate Change Agreement*, *International Environmental Agreements: Politics, Law and Economics* 3 (2003), 349-376; *Jeffrey Frankel/Andrew Rose*, *Is Trade Good or Bad for the Environment? Sorting Out the Causality*, *The Review of Economics and Statistics* 87 (2005), 85-91, 14; *Robert Howse/Antonia Eliason*, *Domestic and International Strategies to Address Climate Change: an Overview of the WTO Legal Issues in: Thomas Cottler/Olga Nartova/Sadeq Bigdeli (ed.)*, *International Trade Regulation and the Mitigation of Climate Change* (Cambridge, 2009), 59; *Jacob Werksman/Kirk Herbertson*, *The Aftermath of Copenhagen: Does International Law Have a Role to Play in a Global Response to Climate Change*, *Maryland Journal of International Law* 25 (2010), 109-142, 136-138; *Zhong Xiang Zhang* critically assesses the claim that border adjustment measures could work as a “stick” to ensure developing country commitments in a post-2012 climate regime (*Zhong Xiang Zhang*, *Multilateral trade measures in a post-2012 climate change regime? What can be taken from the Montreal Protocol and the WTO? Energy Policy* 37 (2009), 5105-5112).

23 World Bank, *World Development Report 2010: Development and Climate Change* (2010), 53.

24 *Clara Brandi*, *International Trade and Climate Change: Border Adjustment Measures and Developing Countries*, German Development Institute, Discussion Paper 11 (2010).

25 *Steve Charnovitz*, *Trade and climate: Potential conflicts and synergies*, Pew Centre on Global Climate Change (2004).

requirements of an international treaty or agreement. In this situation, the threat to implement BCAs in the event of noncompliance may be a useful incentive to enforce cooperative action in a global regime. For this reason, several authors argue that trade sanctions might be used to sustain cooperation in international agreements.²⁶ Indeed, several multilateral environmental agreements already employ trade measures in order to enforce participation and compliance in international treaties. This includes the Convention on International Trade in Endangered Species and the Basel Convention.²⁷ For this reason, several authors suggest that it might be necessary to employ the threat of unilateral border measures in order to create sufficient incentives for countries to cooperate and participate in a global climate treaty.²⁸

IV. *The relative merit of BCAs*

The various motivations for undertaking BCAs when there is partial compliance in a global regime make them serious contenders for implementing unilateral carbon policy measures. Indeed, many note that it now seems likely that some form of BCA will figure in future legislation for climate change, and it is becoming apparent that states are willing to include these measures in domestic policy proposals.²⁹ For instance, the proposed American Clean Energy and Security Act 2009 (the Waxman-Markey Bill) would have allowed for the imposition of border tariffs on carbon intensive products from countries that did not take comparable action to the US.³⁰ Similarly, the European Commission has also suggested that it could implement a 'carbon equalization system', which would address carbon leakage.³¹

This raises the question of whether BCAs are a desirable policy to address the problems associated with regulating carbon emissions when there is partial compliance in a global climate regime. The relative merit of applying BCAs is an issue that has already been given significant attention in the economic and legal literature. This section gives a brief review of this literature by considering the three main issue areas that are discussed apart from international justice in relation to BCAs: compatibility with WTO law, mitigation effectiveness, and practicality.

26 See: *Scott Barrett*, *The Strategy of Trade Sanctions in International Environmental Agreement*, *Resource and Energy Economics* 19 (1997), 345-361; *Laurent Vigui er*, *A proposal to increase developing country participation in international climate policy*, *Environmental Science and Policy* 7 (2004), 195-204, 189; UNEP, *Climate and Trade Policies in a Post-2012 World* (2009).

27 World Bank, *World Development Report 2010: Development and Climate Change* (2010), 251.

28 See: UNEP *Climate and Trade Policies in a Post-2012 World* (2009); *Christoph B ohringer et al.*, *The Role of Border Carbon Adjustment in Unilateral Climate Policy: Overview of an Energy Modeling Forum Study (EMF 29)*, *Energy Economics* (2012), S97-S110.

29 *Jacob Werksman/Kirk Herbertson*, *The Aftermath of Copenhagen: Does International Law Have a Role to Play in a Global Response to Climate Change*, *Maryland Journal of International Law* 25 (2010), 109-142, 136-138; *Christoph B ohringer et al.*, *The Role of Border Carbon Adjustment in Unilateral Climate Policy: Overview of an Energy Modeling Forum Study (EMF 29)*, *Energy Economics* (2012), S97-S110. Although, as Jacob Werksman et al. points out, trade measures have received very little attention in the climate change negotiations thus far (*Jacob Werksman*, *Trade Measures and Climate Change Policy: Searching for Common Ground on an Uneven Playing Field*, World Resources Institute (2009)).

30 For discussion, see: *Lawrence Herman*, *Energy trade, carbon emissions and the WTO*, *Journal of World Energy Law & Business* 2 (2009), 196-218, 196; *Jacob Werksman/Kirk Herbertson*, *The Aftermath of Copenhagen: Does International Law Have a Role to Play in a Global Response to Climate Change* (2010), 109-142, 136.

31 *Julia Reinaud*, *Would Unilateral Border Adjustment Measures be Effective in Preventing Carbon Leakage?* (2009), 71-78.

A. BCAs and WTO law

It is generally considered that any attempt to use BCAs needs to be compatible with the existing rules of the WTO.³² Whether or not a border measure is compatible with WTO law depends on the structure, design, and final application of the policy.³³ Ultimately, the legality of a particular measure depends on a ruling by the WTO Dispute Panel, which can only be done once a measure has been implemented and challenged.³⁴ That said, it is possible to make some speculative remarks about the permissibility of BCAs under WTO law.

The relative eligibility of a proposed BCA with WTO law depends on a number of features, such as the type of tax measure employed (i.e. whether the tax is direct or indirect), or the way in which the characteristics of products are interpreted (for instance, whether different products can be differentiated by virtue of the processes through which it is made).³⁵ For the most part, the legality of a BCA will depend on the motivation for undertaking the trade measure. For instance, it is well noted that the specific use of BCAs to address competitiveness concerns is likely to lead to trade disputes³⁶ and is unlikely to be deemed legal either by the WTO or the UNFCCC.³⁷ Susanne Droege argues that this is also likely to be the case for the use of BCAs to sanction states for non-compliance with international and national climate

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- 32 For a discussion of BTA compatibility with WTO law, see: *Gavin Goh*, The World Trade Organization, Kyoto and Energy Tax Adjustments at the Border, *Journal of World Trade* 38 (2004), 395-424; *Roland Ismer/Karston Neuhoff*, Border tax adjustment: a feasible way to support stringent emission trading, *European Journal of Law and Economics* 24 (2007), 137-164; WTO/UNEP, Trade and Climate Change (2009), http://www.wto.org/english/res_e/booksp_e/trade_climate_change_e.pdf, last access: 22 July 2014, 103; *Peter Wooders et al.*, Border Carbon Adjustment and Free Allowances: Responding to Competitiveness and Leakage Concerns (2009), <http://www.oecd.org/sd-roundtable/papersandpublications/43975050.pdf>, last access: 28 June 2014, 41; *Zhong Xiang Zhang*, Multilateral trade measures in a post-2012 climate change regime? What can be taken from the Montreal Protocol and the WTO, *Energy Policy* 37 (2009), 5105-5112; World Bank, World Development Report 2010: Development and Climate Change (2010), 251; *Susanne Droege*, Using border measures to address carbon flows, *Climate Policy* 11 (2011), 1191-1201; *Stephanie Monjon/Philippe Quirion*, A border adjustment for the EU ETS: reconciling WTO rules and capacity to tackle carbon leakage, *Climate Policy* 11 (2011), 1212-1225; *Ludovine Tamiotti*, The legal interface between carbon border measures and trade rules, *Climate Policy* (2011), 1202-1211, 1204; *Joost Pauwelyn* assesses the limits imposed by WTO on possible measures to address competitiveness issues associated with climate legislation (*Joost Pauwelyn*, U.S. Federal Climate Policy and Competitiveness Concerns: The Limits and Options of International Trade Law, Working Paper, Nicolas Institute for Environmental Policy Solutions, Duke University (2007)).
- 33 *Nathalie Bernasconi-Osterwalder/Johannes Norpoth*, Is world trade law a barrier to saving our climate? http://www.ciel.org/Publications/ClimateTradeReport_foee-ciel_sep09.pdf (2009), last access: 22 July 2014, 23; *Stephanie Monjon/Philippe Quirion*, A border adjustment for the EU ETS: reconciling WTO rules and capacity to tackle carbon leakage, *Climate Policy* 11 (2011), 1212-1225, 1214; *Dieter Helm et al.*, Trade, climate change and the political game theory of border carbon adjustments, *Oxford Review of Economic Policy* 28 (2012), 368-394, 22.
- 34 *Peter Wooders et al.*, Border Carbon Adjustment and Free Allowances: Responding to Competitiveness and Leakage Concerns(2009), <http://www.oecd.org/sd-roundtable/papersandpublications/43975050.pdf>, last access: 28 June 2014, 41.
- 35 *Gavin Goh*, The World Trade Organization, Kyoto and Energy Tax Adjustments at the Border, *Journal of World Trade* 38 (2004), 395-424, 402.
- 36 *Jacob Werksman*, How Should a Post-2012 Climate Agreement Address Trade-Related Environmental Measures?, *Climate and Trade Policies in a Post-2012 World* (2009), 27-33.
- 37 *Jacob Werksman et al.*, Trade Measures and Climate Change Policy: Searching for Common Ground on an Uneven Playing Field, *World Resources Institute* (2009); *Clara Brandi*, International Trade and Climate Change: Border Adjustment Measures and Developing Countries, *German Development Institute Discussion Paper* 11 (2010).

policies.³⁸ Some authors do, however, suggest that it should be possible to design BCAs in such a way that they are compatible with WTO law if they are designed for the purpose of addressing carbon leakage.³⁹ If BCAs are employed for this end, there are several potential avenues within WTO law through which a BCA measure might be permissible.

For example, most authors discuss the compatibility of BCAs with the General Agreement on Tariffs and Trade (GATT) general regime.⁴⁰ This is the primary agreement within the WTO that governs the rules of international trade. If BCAs are not permissible through the core provisions of the WTO (as given by the GATT) then it might be possible to pursue WTO eligibility through the exceptions granted by Article XX of the GATT. These exemptions generally concern the protection of a common good, and it is typically thought that it should be possible to support BCAs under Article XX for the purpose of protecting the global climate.⁴¹ Whilst it is not possible to specify the best route for achieving compatibility with WTO law, in general, most authors argue that BCA should be compatible with WTO agreements provided certain requirements are met.⁴²

The exact specification of these requirements is a contested matter, but it is possible to draw some common themes from these discussions regarding the conditions under which BCA measures might ultimately be permissible under WTO law. First, BCA measures must be made in compliance with the national treatment rule (GATT Article III), which requires that imported products are treated in the same way as domestic products.⁴³ Second, BCA measures must be implemented in accordance with the most-favoured nation principle (GATT Article I), which requires that the measures are imposed on all members of the WTO, and not restricted to certain nation states that are, for example, members of a specific multi-lateral environmental agreement.⁴⁴ Third, under Article XX, the acceptability of BCA mea-

38 *Susanne Droege et al.*, Using border measures to address carbon flows (2011), 1194; See, also: *W. Bradnee Chambers*, International Trade Law and the Kyoto Protocol: Potential Incompatibilities, Inter-Linkages: The Kyoto Protocol and the International Trade and Investment Regimes (2001), 87-118, 104. However, it is difficult to determine the underlying motive for introducing BCAs.

39 *Clara Brandi*, International Trade and Climate Change: Border Adjustment Measures and Developing Countries, German Development Institute Discussion Paper 11 (2010).

40 *Roland Ismer/Karston Neuhoff*, Border tax adjustment: a feasible way to support stringent emission trading, *European Journal of Law and Economics* 24 (2007), 137-164, 149; *Stephanie Monjon/Philippe Quirion*, A border adjustment for the EU ETS: reconciling WTO rules and capacity to tackle carbon leakage, *Climate Policy* 11 (2011), 1212-1225, 1215; *Ludovine Tamiotti*, The legal interface between carbon border measures and trade rules, *Climate Policy* (2011), 1202-1211, 1204.

41 This includes, for instance, the protection of exhaustible resources or the environment (See: *Roland Ismer/Karston Neuhoff*, Border tax adjustment: a feasible way to support stringent emission trading, *European Journal of Law and Economics* 24 (2007), 137-164).

42 This includes, for example, requirements of non-discrimination. See: *Jeffrey Frankel*, Global Environmental Policy and Global Trade Policy (2008), in: *Aldy/Stavins (eds.)*, Post-Kyoto International Climate Policy (Cambridge 2009), 493-529; for requirements for WTO compatibility, see: *Olav Schram Stokke*, Trade Measures and Climate Compliance: Institutional Interplay between WTO and the Marrakesh Accords, *International Environmental Agreements: Politics, Law and Economics* 4 (2004), 339-357, 343.

43 *Gavin Goh*, The World Trade Organization, Kyoto and Energy Tax Adjustments at the Border, *Journal of World Trade* 38 (2004), 395-424, 415; *Stephanie Monjon/Philippe Quirion*, A border adjustment for the EU ETS: reconciling WTO rules and capacity to tackle carbon leakage, *Climate Policy* 11 (2011), 1212-1225, 1214; *Ludovine Tamiotti*, The legal interface between carbon border measures and trade rules, *Climate Policy* (2011), 12002-1211, 1204

44 *Stephanie Monjon/Philippe Quirion*, A border adjustment for the EU ETS: reconciling WTO rules and capacity to tackle carbon leakage *Climate Policy* 11 (2011), 1212-1225, 1215.

sure depends on a substantial connection between the policy measure and its objective. That is, any eligible policy needs to clearly establish that it is pursuing objectives related to climate change rather than for the protection of domestic industry.⁴⁵

This discussion demonstrates that, whilst there is a great deal of debate regarding the compatibility of BCAs with WTO law, it should be possible to design BCAs in such a way that they are permissible under these requirements. Although the exact details of these requirements are a matter of disagreement, it is clear that any step to undertake BCAs must be made for the purpose of reducing carbon leakage, and not for sanctioning states or for improving domestic competitiveness.

The second main strand of the literature concerns the effectiveness of BCAs as policy measures to achieve emissions mitigation. Effectiveness can be interpreted as an issue of justice since ineffectiveness at reducing emissions exposes future generations to excessive risk and thus amounts to intergenerational injustice. A number of studies suggest that while BCAs may be effective in addressing concerns regarding economic competitiveness, the effect of BCAs on reducing carbon leakage is much less clear. This is for at least three reasons. Firstly, it is questionable whether carbon leakage is actually a large scale problem. While various economic models estimate leakage rates of -14% to 130%, the central estimates lie between 5% and 30%.⁴⁶ Secondly, it is questionable whether BCAs are very powerful at preventing carbon leakage. Carbon leakage occurs due to various factors and not all of these factors are counteracted by BCAs. For example, if a domestic climate policy reduces the demand for fossil fuel, this can lead – via price adjustments on world markets – to increased demand for fossil fuels abroad. This type of carbon leakage channel would hardly be counteracted by BCAs. Third, BCAs may not exert the required leverage to mitigate emissions, but instead may simply divert trade to other markets.⁴⁷ At the same time, some authors are confident that BCAs can reduce carbon leakage. *Böhringer* and *Rutherford* find that BCAs can effectively reduce leakage and ameliorate adverse impacts on energy-intensive and trade-exposed industries of unilaterally abating countries⁴⁸ On the other hand, BCAs could be a powerful tool in promoting effective action in climate change negotiations. *Helm et al.* argue that an effective climate deal could arise indirectly from the threat of unilateral trade policies.⁴⁹

B. Practical issues

The third area in which BCAs are discussed in the literature concerns their practical implementation as policy measures to reduce greenhouse gas emissions. There are a number of practical difficulties involved in the implementation of a border tax adjustment in relation to a carbon or energy tax.⁵⁰ The main challenges relate to: (i) the difficulty of assessing prod-

45 *Ludivine Tamiotti*, The legal interface between carbon border measures and trade rules, *Climate Policy* (2011), 1202-1211, 1204.

46 *Susanne Droege*, Using border measures to address carbon flows, *Climate Policy* 11 (2011), 1191-1201, 1192.

47 *Robyn Eckersley*, The Politics of Carbon Leakage and Fairness of Border Measures, *Ethics & International Affairs* 24 (2010), 367-376.

48 *Christoph Böhringer et al.*, The Role of Border Carbon Adjustment in Unilateral Climate Policy: Overview of an Energy Modeling Forum Study (EMF29), *Energy Economics* (2012), 97-110.

49 *Dieter Helm et al.*, Trade, climate change and the political game theory of border carbon adjustments, *Oxford Review of Economic Policy* 28 (2012), 368-394, 373.

50 WTO/UNEP, Trade and Climate Change (2009), http://www.wto.org/english/res_e/booksp_e/trade_climate_change_e.pdf last access : 22 July 2014, 101 ; see *Christoph Böhringer et al.*, The Role of Border Carbon Adjustment in Unilateral Climate Policy: Overview of an Energy Modeling Forum Study (EMF 29), *Energy Economics* (2012), S97-S110.

uct-specific emissions,⁵¹ (ii) the fluctuations of the carbon price in an emission trading scheme,⁵² (iii) cases where products are subject to other climate regulations, such as technical regulations.⁵³ First, BCAs require a detailed account of the emissions embodied in goods that are traded on an international scale. Production processes often involve complex relationships incorporating different goods from around the world. Therefore any attempt to accurately specify the amount of carbon embodied in an internationally traded good may be prohibitively complicated. Second, BCAs arise due to differential emissions policies across different regions. Yet the cost of producing emissions under these policies is not static and may vary significantly over time. This is particularly the case if a state employs an emissions trading scheme to implement climate regulation, which is likely to create differences in the cost of producing emissions over a period of time. Due to the dependence of BCAs on accurate measures of the cost of emissions in different policy regions, this might also create practical barriers to effective implementation. Third, BCAs may be difficult to implement if they overlap with other policies for climate regulation. Attempts to implement BCAs will have to take into account the many existing climate policies that already exist within domestic regions, as well as at the international level. The fact that BCAs may compete with or complicate these measures is likely to hinder their effective implementation. Whilst, it might be possible to resolve these issues through careful planning, these do represent serious challenges that need to be addressed before BCAs can be considered as a workable policy option. A theory of global justice that does not take these real-world feasibility issues into account is too exclusively focused on so-called ideal circumstances.

The upshot of this is that BCAs do face challenges on both a theoretical and a practical level: there are both pragmatic and theoretical obstacles that have to be overcome before BCAs are seriously considered as a policy measure. In case both of these obstacles are overcome, there still remains the challenge of credibility as an effective tool for preventing carbon leakage and for promoting participation in climate negotiations. But it should be possible to address these challenges and, if so, the question of how BCAs fare from the perspective of justice gains prominence. This is the topic of the next section.

V. Global Justice and BCAs

We list and evaluate various considerations that can be invoked for and against BCAs from the perspective of global justice.⁵⁴ These considerations are separate from considerations of the legal status of BCAs, from their practical limitations and from their effectiveness in terms of achieving intergenerational justice by mitigating climate change. There are a num-

51 Jason Bordoff, *The Threat to Free Trade Posed by Climate Change Policy*, http://www.hamiltonproject.org/files/downloads_and_links/The_Threat_to_Free_Trade_Posed_by_Climate_change_Policy_Transcript.pdf, last access: 22 July 2014; see Trevor Houser *et al.*, *Leveling the Carbon Playing Field: International Competition and U.S. Climate Policy Design* (Washington, 2008); Simon Evenett/John Whalley, *Resist green protectionism – or pay the price at Copenhagen*, in Baldwin/Evenett (eds.), *The Collapse of Global Trade, Murky Protectionism, and the Crisis: Recommendations for the G20* (Geneva 2009), 94; Zhang/Assuncao also express concerns that there will be a lack of cooperation in carbon accounting of exports. For example, if a high emitting country faces BCAs on its exports, then it has incentives to inaccurately account for the amount of carbon used in the production processes of these exports (Zhong Xiang Zhang/Lucas Assuncao, *Domestic Climate Policies and the WTO*, *The World Economy* (2002), 359-386, 21).

52 WTO/UNEP, *Trade and Climate Change* (2009), http://www.wto.org/english/res_e/booksp_e/trade_climate_change_e.pdf, last access: 22 July 2014, 101.

53 Ibid.

ber of aspects of BCAs that are relevant to justice: consumer responsibility, global distributive justice, national sovereignty, the idea of a level playing field, and repercussions for various areas of global negotiations. We discuss them in turn.

A. BCAs and consumer responsibility

Designing climate policy is tantamount to deciding on the distribution of burdens (and benefits) of enormous size between nations as mitigation obligations have a large impact on opportunities for economic growth. It is widely acknowledged that the fair distribution of these burdens is of major importance. How should we go about in judging whether BCAs are in line with a just global distribution of these burdens? In this subsection, we suggest one method for tackling this question – evaluating BCAs on the basis of the fact that they can be seen as constituting a shift from producer to consumer responsibility – and in the next section we suggest a more straightforward method – evaluating BCAs according to how they ultimately redistribute the burdens in global climate policy.

Turning to the first method we can note that BCAs in effect represent a shift from applying a unilateral climate policy to the production of emissions to applying climate policy to the consumption of emissions. Traditionally, a carbon tax – as well as other policy instruments – is applied to the production of emissions occurring in a certain policy area. This has the effect that goods that are produced for export to consumers in other policy areas are taxed while goods that are imported by consumers in the policy area are not taxed (assuming that there is no carbon tax abroad). By introducing BCAs, the policy base is switched: All production occurring for domestic consumption – whether the production occurs abroad or at home – is taxed while all production occurring for foreign consumption – whether occurring abroad or at home – is not taxed. Thus, BCAs make it possible to switch from taxing domestic production of emissions to taxing domestic consumption of emissions.

This is relevant from the perspective of international ethics since the production-based emissions of many countries diverge significantly from their consumption-based emissions. Industrialised countries typically exhibit higher consumption of emissions than production of emissions, while the picture is typically reversed in other countries. At the extreme end are wealthy countries like Switzerland where consumption of emissions is more than twice the production of emissions.⁵⁴

One might argue that this switch should be welcomed from an ethical point of view as it is ultimately the consumer who is responsible for emissions rather than the producer. The consumer creates the demand and without this demand producers would not engage in the production processes that generate emissions in the first place. By applying climate policy to the responsible agent (the consumer) BCAs bring about a situation which is more just.⁵⁵ However, we want to argue that, despite initial appearances, this claim is confronted with a series of difficulties.

54 Here, we use the terms global or international justice, equity and fairness interchangeably. Whilst we recognise that these terms have significantly different meanings in certain contexts, this is not the case here. This follows a convention in much of the literature on equity and climate change, see for example: *Ferenc Toth et al.*, Decision Making Frameworks, IPCC Working Group III (2001), 668 fn 40.

55 See for example: *Steven Davis/Ken Caldeira*, Consumption-based accounting of CO₂ emissions, Proceedings of the National Academy of Sciences of the United States of America (2010), 5687-5692, supporting table 1.

A first problem is that some conceptions of just burden-sharing in climate policy are unconcerned with ascribing responsibility for emissions in the first place. For example, the Ability to Pay Principle, the Subsistence Emissions Principle, the Equal Costs Principle, or the Beneficiary Pays Principle do not ascribe duties to bear mitigation burdens to an agent based on that agent's emissions.⁵⁷ And if these principles do not refer to the amount of emissions an agent contributed in the first place, then they need not determine whether emissions are to be accounted to consumers or producers. Only responsibility-sensitive principles of climate justice – such as the Equal per Capita Emissions Principle or the Polluter Pays Principle – must take a stance on whether emissions belong to consumers or producers. These responsibility-sensitive principles ascribe duties to bear mitigation burdens to an agent as a function of the agent's contribution to global emissions.⁵⁸

However, even if one supports a principle of climate justice such as the Polluter Pays Principle on account of its sensitivity to responsibility for emissions, the moral case for BCAs is not obvious. To see why this is so, note that one version of the Polluter Pays Principle (a) says that the Polluter must bear a burden for every unit of pollution of his while another version (b) says that the Polluter must pay a certain amount for every unit of pollution of his. The difference between the two versions can be seen by examining how they evaluate a carbon tax. Version (a) is concerned with the actual tax incidence. If a carbon tax ends up creating – through a myriad of market mediated effects – a significant welfare burden for agents completely unrelated to the pollution while the actual polluters would not feel much of a burden at all, version (a) would not count this as a successful implementation of the Polluter Pays Principle. In contrast, version (b) would count this as a paradigm instance of the Polluter Pays Principle. Version (b) would simply say that the actual polluters got lucky by being able to pass the welfare burden of the tax on to other agents but that such market opportunities do not diminish the fact that they actually did pay for the pollution – which is all that matters from the perspective of justice.

If we subscribe to the (a)-version, it is easy to see that ascribing emissions to the responsible agent (for the purpose of determining the tax base) will not necessarily burden the responsible agent. Whoever is taxed passes the tax partially on to his trading partners and therefore we do not know for sure whether a consumption-based tax or a production-based tax more precisely burdens the consumer in the way we intend the consumer to be burdened.

56 *Bruckner et al.* note that a consumption-based accounting system might be perceived as fairer (*Martin Bruckner et al.*, Counting CO₂ emissions in a globalised world: producer versus consumer-oriented methods for CO₂ accounting, German Development Institute Discussion Paper 9 (2010), 19). *Bastianoni et al.* note that consumption based accounting implies that responsibility is attributed to the final users of a good (*Simone Bastianoni et al.*, The problem of assigning responsibility for greenhouse gas emissions, *Ecological Economics* 49 (2004), 253-257).

57 The Ability to Pay Principle ascribes mitigation burdens in proportion to Ability. The Subsistence Emissions Principle ascribes no mitigation burdens to countries if this would thwart the opportunity to achieve subsistence. The Equal Costs Principle ascribes equal per capita mitigation burdens for everyone. The Beneficiary Pays Principle ascribes burdens in proportion to one's benefits from emissions (regardless of whether these are one's own emissions or other's emissions).

58 But even if one subscribes to a responsibility-sensitive principle of burden-sharing in climate policy it is still not obvious that one should worry about whether it is truly the consumer or the producer who is responsible for emissions. Some support a responsibility-sensitive principle of burden-sharing for other reasons than its responsibility-sensitivity. These principles can also be supported because they are easily implementable, because they provide a simple and salient solution for negotiations or – particularly in the case of the Polluter Pays Principle – because they set the incentives in an efficient manner.

Assume for the sake of the argument that we were to subscribe to the (b)-version of the Polluter Pays Principle, i.e. the idea that the polluter ought to pay for her emissions – in the sense of being the point of collection for the tax authorities – but is free to pass on the actual welfare burden in case she has the opportunity to do so. If we believe that the consumer is responsible for emissions – i.e. if we believe that the consumer is the "true polluter" – then the tax should be levied on the consumer. However, there still is a problem. By assumption, we are in a non-ideal world where only part of global emissions is covered by a carbon tax. In such a non-ideal world, it seems perfectly imaginable that ascribing emissions and levying the tax on the wrong agent (i.e. producers rather than consumers) could bring us closer to a just state of affairs than levying the tax on the agent on which we would levy it in an ideal state of affairs.

But even if all these problems should be solved, i.e. even if justice were always better approximated by applying climate policy to the agent who actually is responsible for emissions, there are still further obstacles in store for supporting BCAs on account of their representing a switch to consumer responsibility. These obstacles are rooted in the difficulty of determining whether it is actually true that consumers rather than producers must count as responsible for emissions. A first problem consists in determining what notion of responsibility – one of moral theory's most difficult concepts – is at stake. We claim that for the purposes of specifying responsibility-sensitive principles of global climate justice, we are looking for a notion of so-called agent responsibility.⁵⁹ An actor is agent responsible for an outcome in case the outcome reflects the choices of the agent. Being agent responsible for an outcome does not by itself imply anything about the agent's liability for the outcome or the blameworthiness of the agent's choices. Roughly, an agent can be seen as agent responsible for an outcome in case the agent caused the outcome voluntarily, i.e. avoidably and knowingly.⁶⁰

The question then is whether consumers or producers of emissions must count as agent responsible, i.e. whether producers or consumers must count as voluntarily – knowingly and avoidably – causing emissions. If European consumers offer money to Chinese companies for their goods and if Chinese companies produce these goods with the side effect of emissions, is it more appropriate to say that Europeans or Chinese have avoidably and knowingly caused emissions? Even if a simple and uncontroversial answer to this question seems impossible we can note two points. Firstly, in some cases, the avoidability or knowledge condition is not fulfilled for one or both of the agents (e.g. for extremely poor agents). Secondly, in all the other – and more standard – cases, however, both consumers and producers knowingly and avoidably play their part in the global economic structure that ultimately leads to emissions. In that case the questions boil down to ascribing causation to the producer or the consumer. According to many theories of causation and in many circumstances it is neither solely the consumer nor solely the producer but rather both agents that must count as causing emissions. Some theories of causation would stress that for both agents it is true that the emissions would not have been released but for their choices. Other theories of causation would stress that they are both necessary parts of a sufficient set of conditions for the release or that they are both substantial factors contributing to the release.⁶¹ Whatever theory of causation one presupposes, the producer's choice to produce and to do so with a production

59 *Peter Vallentyne*, *Brute Luck and Responsibility*, *Politics, Philosophy and Economics* 7 (2008), 57-80.

60 Both the avoidability and knowledge condition would of course have to be specified more precisely. The basic goal in specifying them more precisely (or adding further conditions) consists in capturing the idea of *agency*.

method that involves emissions and the consumer's choice to create a demand are both causes. Producers and consumers are therefore jointly responsible for emissions. Attempts to determine relative shares in joint causation would be a theoretically very challenging task.⁶²

Thus, evaluating BCAs on the basis that their introduction constitutes a shift towards holding the consumer responsible and therefore supposedly automatically promotes justice is laden with problems at various levels. On the one hand, not all principles of climate justice are concerned with responsibility. On the other hand, even if they are, they are more often concerned with who ultimately bears the burden than with whom climate policy is applied to; this is especially so in non-ideal circumstances. Further, even if it were necessary for a certain principle of climate justice to determine the correct attribution of responsibility for emissions, actually determining shares of responsibility for the consumer and the producer is a very thorny issue. Also, insofar as we can discern some differences in plausibility among answers to this difficult question, we are led to joint responsibility rather than pure consumer responsibility.

We therefore suggest that it is questionable to praise BCAs on account of the fact that they shift the current policy base from the production of emissions to the consumption of emissions. If we are concerned with how BCAs fare in terms of just burden-sharing between nations, we have to look at further factors besides consumer responsibility. To this we now turn.

B. BCAs and global distributive justice

The second method for evaluating BCAs according to the criterion of global justice consists in simply examining whether introducing BCAs has the consequence of shifting the burdens of mitigation policies between different states in such a way as to constitute a step forward or a step backwards with respect to a just distribution of climate policy burdens. The straightforward idea is to estimate the distribution of burdens without BCAs and the distributions of burdens with BCAs and to compare the distance of each of these distributions to the ideal distribution of burdens according to our favoured conception of internationally just burden-sharing in climate policy.⁶³

Robin Eckersley argues that the proposed border adjustment measures in developed countries would actually amount to an evasion of the leadership responsibilities of developed countries.⁶⁴ Is that so? Most conceptions of global climate justice are united in the minimal conclusion that developed countries should shoulder a disproportionate amount of the

61 Cf. *Anthony Honoré*, Causation in the Law, in *Zalta (ed.)*, The Stanford Encyclopedia of Philosophy (Winter 2010 Edition), section 3.1.

62 Cf. *Matthew Braham/Martin Van Hees*, An Anatomy of Moral Responsibility, *Mind* 121 (2009), 601-634, 325. Note also that if we are serious about responsibility, there is no reason why we should limit our focus to consumers and producers defined in a narrow way (cf. *Simon Caney*, Justice and the Distribution of Greenhouse Gas Emissions, *Journal of Global Ethics* 5 (2009), 125-146, 135). Political regulators, companies that develop carbon-intensive production technology, and celebrities who seduce consumers to a carbon-intensive lifestyle are all examples of agents who knowingly and avoidably cause emissions.

63 This is a crude description of the assessment we have to make. In a non-ideally just world, we ought to judge any proposed policy by *two* criteria. Firstly, how well does the state of affairs that this policy brings about *in the short run* resemble the just state of affairs? Secondly, how much more likely does this policy make substantial and lasting justice improvements *in the long run*?

64 *Robin Eckersley*, The Politics of Carbon Leakage and Fairness of Border Measures, *Ethics & International Affairs* 24 (2010), 367-393, 383.

burden associated with achieving effective global mitigation of greenhouse gas emissions. Indeed this is codified within the UNFCCC itself, which states that members should carry out carbon mitigation in accordance with their ‘common but differentiated responsibilities and differentiated capacities’. Regardless of what the leadership of developed countries means in detail, we submit that it at least means that they should bear larger burdens than they do in the status quo and that climate policy should refrain from burdening the extremely poor.⁶⁵ In order to have an empirical basis for our assessment of BCAs in terms of international justice, we might therefore try to predict whether introducing BCAs in industrialised countries would shift burdens to developing countries or vice versa. We are aware that reducing the whole complex issue to this question is a tremendous simplification but we would like to maintain that even this minimal judgment is difficult to arrive at in practice. The introduction of BCAs affects the world economic system in a myriad of ways through innumerable causal chains and it is difficult to have confidence in predictions. We might tentatively maintain that BCAs by developed countries do shift burdens from industrialised countries to developing countries on account of the obvious opposition of developing countries to BCAs in industrialised countries and on account of results from economic models.⁶⁶ BCAs may impose significant costs on countries outside of the policy area that are unacceptable. This is a particular concern when one considers the implications of BCAs on states that are highly dependent on international trade in carbon intensive goods and whose population includes extremely poor inhabitants.

Of course, a lot depends on how BCAs are designed, in particular what happens to the revenue gained from BCAs. After all, the distribution of benefits and burdens between states ultimately depends on the way in which the revenue from a BCA is used.⁶⁷ How the revenue from BCAs is used will be extremely important for the implications of the measure in terms of global justice. The design of BCAs also matters in other ways. For example, any unwelcome effect in terms of global distributive justice resulting from the introduction of BCAs could in principle be offset by accompanying measures such as increasing the reduction targets for industrialised countries or speeding up the rate of global technology transfer.⁶⁸ This point makes it difficult to presume how the distribution of burdens is ultimately shared from the implementation of BCA measures. One might be sceptical about the relative willingness of a state that is implementing a BCA to forsake the revenue of this measure for the purpose of justice. This is particularly the case if there are questions concerning the suitability of the governance of the state that would potentially receive the revenue. It would seem sensible to have serious reservations about redistributing the revenue from a BCA measure to a state that has historically misappropriated funds for wrongful use. At the same time, it does not

65 As soon, as we start working with a more fine-grained picture of fair burden-sharing in climate policy, further concerns crop up. There is, for example, a fear that BCAs could be unfair towards countries that are highly reliant on coal; cf. *Zhong Xiang Zhang/Lucas Assuncao*, Domestic Climate Policies and the WTO, *The World Economy* 27 (2004), 359-386.

66 Cf. *Christoph Böhringer et al.*, The Role of Border Carbon Adjustment in Unilateral Climate Policy: Insights from a Model-Comparison Study, Harvard Project on Climate Agreements Discussion Paper 54 (2012).

67 The World Bank report on climate change and trade suggests that this is a crucial feature for the desirability of BCAs that is often overlooked (*World Bank*, World Development Report 2010: Development and Climate Change (2010), 251).

68 For example, *Clara Brandt* suggests that the proceeds from border adjustment measures should be used to assist affected lower-income countries to cut back on the carbon intensity of their economies (*Clara Brandt*, International Trade and Climate Change: Border Adjustment Measures and Developing Countries, German Development Institute Discussion Paper 11 (2010)).

seem wholly unreasonable to consider that a state that is implementing a BCA measure would be willing to redistribute the revenue from the measure for the purpose of justice, if not for the reason that this state is already undertaking measures to address climate change and is therefore more likely to be motivated by similar demands of justice.

C. BCAs and sovereignty

From a normative perspective on international relations, a further concern about unilaterally enacted BCAs is that they conflict with the national sovereignty of the states whose exports are affected by the BCAs. The fact that BCAs represent one state imposing regulatory measures on another is a concern because this can easily be seen as violating traditional notions of state sovereignty and absence of outside interference from others.⁶⁹ This is a particularly delicate issue because unilateral border measures are tools that are available only to powerful trading states or trading blocs, and are not available to small and economically vulnerable states with little market power. However, we would like to maintain that even if one upholds national sovereignty as an important value (a position that a theory of global justice should actually challenge in our view), there is no straightforward case for the conclusion that national sovereignty includes the right to export goods to other states without being taxed at the border. *Daniel Philpott*⁷⁰ defines national sovereignty as „supreme authority within a territory“. The territorial aspect is relevant: It is difficult to see how it affects the sovereignty of nation A that nation B determines the conditions under which goods can enter its territory.

Many will remark that sovereignty is a difficult notion anyway and that we should rather focus on a specific list of rights to self-determination that states have. It would be difficult, however, to devise a criterion for specifying the rights on this list that would pick out BCAs as an unjustifiable interference with the self-determination of exporting states without simultaneously categorising implausibly many other policies as an unjustifiable interference with self-determination. The criterion obviously cannot simply rely on the extent to which exporting states are economically burdened by BCAs. If that were the case, even a European tax on its domestically produced emissions might well have to count as violating other states' self-determination. Such a tax affects other states, both directly through European exports to other states as well as indirectly through reverberations in the global economy, and it possibly does so more than European BCAs.

Actually, in the context of a reference to a right to self-determination, the tables can be turned. The emissions generated as a side-effect of producing carbon-embodied goods harm people around the globe, including people in those nation states that contemplate introducing BCAs. If the environmental effects of the economic activity of exporting states harm people in other territories then the claim that the regulation of these states' economic activity is purely their own business loses its credibility. *Henry Shue* has forcefully argued that in case

69 Ajit Singh, the Indian Civil Aviation Minister, has said that it is unacceptable for the EU to impose its own rules on Indian companies (*James Fontanella-Khan/Andrew Parker*, India warns EU over airline carbon tax (2012), <http://www.ft.com/cms/s/0/aceffc00-a58d-11e1-a77b-00144feabdc0.html#axzz3Bg69aViE>, last access: 28 August 2014). In a statement to the US Subcommittee on Aviation of the House Transportation and Infrastructure Committee, *Nancy Young* claims that the EU proposal to subject international air travel to its emissions trading scheme is an example of regulatory overreach (*Nancy Young*, The European Union's Emissions Trading Scheme: A Violation of International Law (2011), <http://www.gpo.gov/fdsys/pkg/CHRG-112hrg67582/pdf/CHRG-112hrg67582.pdf>, last access: 28 August 2014).

70 *Daniel Philpott*, *Westphalia*, *Authority*, and *International Society*, *Political Studies* 47 (1999), 566-589, 570.

certain criteria are fulfilled sovereignty does not give states a right to regulate their economic activities as they wish – where the criteria he lists apply to many cases of emission generating economic activities.⁷¹

The complaint of exporting states could be slightly reframed. Rather than referring to national sovereignty or claiming a strong right to self-determination in these matters, they could more modestly claim that a tax on their exports into other countries could *only* legitimately be introduced in case these taxes were agreed upon in fair international negotiations, but *not* if they were unilaterally introduced.⁷² It is difficult to see what reasons one could give for this restriction. But even if reasons could be given, states that introduce BCAs could still claim that if they have genuinely and persistently attempted to achieve an international agreement on mitigation but failed to do so due to the resistance of others, they then regain a right to introduce BCAs unilaterally.

While we thus find that unilaterally introduced BCAs currently stand in no tension with the formulations a reasonable theory of international justice would give of a right to self-determination, national sovereignty, or just procedures in international negotiations, we do acknowledge that there are soft factors involved. BCAs can be introduced and communicated in more or less provocative ways, and one ought to choose the less provocative ways. This can diminish the risk of their being perceived as an unjustifiable outside interference in a state's internal affairs.

D. BCAs and a level playing field

One justice-based argument for BCAs refers to the idea of a level playing field between companies of different jurisdictions. Leaving aside the issues of compatibility with WTO law that were raised in section 3, for the moment, it is worth briefly considering the argument for a level playing field on the basis of justice.⁷³ Companies in states with a carbon tax might consider it unfair to have to compete with untaxed rivals from abroad. They might therefore demand that BCAs be introduced in order to create a level playing field. This might best be understood as a demand of procedural justice rather than a complaint about an unjust outcome arising out of a lack of a level playing field: The complaint of companies from countries with stringent climate policy might not just be that they suffer losses of profits without BCAs but that there is something unfair about losing the profits due to unfairly facing a different regulatory environment from competitors in countries with less stringent climate policy.

While the call for a level playing field carries significant weight in political discourse, it is not easy to justify from a philosophical perspective. Firstly, there is a minor question whether – assuming for the moment that the call for a level playing field is justified – it is appropriate to single out a level playing field in terms of the regulatory environment of *climate policy* alone. If a level playing field for companies should count as a demand of fairness at all, one

71 Henry Shue, *Eroding Sovereignty. The Advance of Principle* (1997), 353–4

72 In a similar way, *Gupta et al.* suggest that the permissibility of a trade enforcement mechanism may depend on whether it is implemented through a multilateral treaty or through a national policy (*Sujata Gupta et al., Policies, Instruments and Co operative Arrangements, Climate Change* (2007), 745-807, 782).

73 In Section 3, we noted that several authors suggest that BCAs implemented for the purpose of protecting domestic industry is unlikely to be compatible with the rules of the WTO. We believe that the fairness of this proposal is still worth pursuing on the basis that if it is fair then one might question the justifiability of rules that oppose it.

might argue that we should focus on a level playing field in terms of the *overall* regulatory environment, or possibly even a level playing field in terms of the overall *business environment*, including non-political factors.

Secondly, and more importantly, it is questionable whether a level playing field for companies is a genuine demand of fairness at all. While it is certainly true that – similarly to how humans should not be discriminated against – companies should not be treated differently from each other on arbitrary or bad grounds (such as the race of a company's founder), there might well be innumerable good grounds for treating companies differently from each other. One non-arbitrary, good ground for treating companies in an industrialised country differently from companies in a developing country is the fact that industrialised countries ought to shoulder higher burdens in climate policy than developing countries. Taking on burdens as a country amounts to putting these burdens on the agents within that country (citizens, companies, civil society actors etc). To claim that an industrialised country should have burdens as a country, whilst the companies in this country should not face these burdens, is to create a false distinction between these actors. Thus, an uneven playing field – i.e. different regulatory schemes for companies in different states – is not only not unfair, but to the contrary, it can be a positive expression of fairness.

We would, however, not go as far as Eckersley⁷⁴ who argues that a globally equalised price for carbon, or unilateral BCAs that are also applied to developing countries, contradict the principle of Common But Differentiated Responsibilities. In other words, we would deny that a level playing field *must* be unfair. We note that the differentiation of burdens between industrialised and developing countries can in principle be achieved in other ways than through an uneven playing field for companies. To take just two examples of alternatives, industrialised countries could pay for technology transfer or they could foster voluntary action from individual citizens. If such measures were sufficient to create sufficiently higher burdens for industrialised countries then an equal carbon price for companies from industrialised and developing countries would not necessarily contradict fair burden-sharing in climate policy. The basic message however remains that, in general, the call for a level playing field cannot be justified. Different regulatory environments for companies from different countries are one important instrument to achieve the differentiation of burdens that just climate policy demands.

E. BCAs and repercussions on global negotiations

A fifth fairness concern regarding BCAs relates to the implications for the creation of a universal climate change regime more generally. BCAs are policy measures that become desirable when there is partial compliance or differential commitments in a regulatory regime for climate change mitigation. BCAs are obsolete if there is a universal regime with equal regulatory measures across the globe. Given the trend towards bottom up commitments on a unilateral basis, BCAs offer a way of achieving more effective mitigation measures despite a lack of commitment on a broader scale. But whilst it is necessary to consider how to achieve mitigation commitments in situations of partial compliance, it is important to remember that a universal regime should remain the overall ideal that we should strive to achieve. After all, such a regime avoids the problems of carbon leakage and should be more just by virtue of the fact that it encompasses all actors on a global level. Consequently, we

74 *Robyn Eckersley*, *The Politics of Carbon Leakage and Fairness of Border Measures*, *Ethics & International Affairs* 24 (2010), 367-393, 380-383.

argue that whilst BCAs are an effective policy measure in a second best situation in which states pursue climate mitigation on a unilateral basis, we should always aim for a universal regime as a first best solution to climate change.

But a problem arises when one considers the damaging effects that BCAs might have on the negotiation process to achieve this first best solution. BCAs represent a relatively strong policy measure on the part of the state enforcing them that can easily be perceived as hostile on the part of other states. They also represent a step away from cooperative attempts to implement a policy on a common basis towards an isolationist approach to dealing with climate change mitigation. Pursuing BCAs might lead states to abandon the process of achieving a comprehensive agreement for collective action on climate change and to pursue unilateral measures instead. This could even lead to a backlash in multilateral cooperation more generally, particularly in relation to trade, as states take retaliatory trade measures in relation to other policy areas,⁷⁵ or by straining relations within the WTO.⁷⁶ This point becomes particularly important given that unilateral border measures are tools that are typically available only to powerful trading nations and are not available to nations with little market power.⁷⁷ Those states that are unable to effectively implement BCAs may see these measures as a particularly aggressive action by the enforcing state. There is a further issue concerning the fact that states with insufficient clout to impose BCAs are also those that are worst off in terms of economic welfare. This means that BCAs are unfair in two respects: not only are they limited to certain states or policy regions, but they are also the reserve of those who are relatively well off in terms of economic wellbeing.

F. Summary of section 5

The implementation of BCAs raises a number of issues from the perspective of international fairness, each of which should be given sufficient attention when considering how to achieve effective mitigation in a partial regime. First, it is difficult to argue for BCAs with reference to the idea of consumer responsibility. This is so because often we should not tie climate policy closely to responsibility and, even if we should do so, it is questionable to hold only the consumer responsible for emissions. Second, arguments relating to the fair distribution of benefits and burdens of climate change mitigation are beset by difficulties to predict the precise effects of BCAs. It does seem, however, that if they are not implemented with sufficient care, they could well impose unacceptable costs on the worst off. Third, concerns about sovereignty and a level playing field are unfounded. Last, BCAs have significant implications for the cause of global justice more generally because it is only those states with sufficient economic clout being able to implement them. A related but distinct point concerns the potential damaging effects that implementing BCAs will have on the negotiation process for a comprehensive climate regime.

Given these findings, what can one say about BCAs in the light of concerns of international justice? We are aware of the complex issues involved. At the same time, it is clear that if BCAs are implemented for the purpose of climate change mitigation then they should be

75 *Christoph Böhringer et al.*, *The Role of Border Carbon Adjustment in Unilateral Climate Policy: Insights from a Model-Comparison Study*, Harvard Project on Climate Agreements Discussion Paper 54 (2012), 2.

76 *Jacob Werksman*, *How Should a Post-2012 Climate Agreement Address Trade-Related Environmental Measures?*, in: UNEP, *Climate and Trade Policies in a Post-2012 World* (2009), 27-33.

77 *Robyn Eckersley*, *The Politics of Carbon Leakage and Fairness of Border Measures*, *Ethics & International Affairs* 24 (2010), 367-393.

designed so that they minimize the negative effects of the policy on those that are already facing severe hardships. No matter what the institutional context of the regime is, it is impossible to justify placing further burdens on those who are already struggling to achieve a minimal standard of wellbeing. Beyond this argument, things are not so clear cut. But perhaps one argument that can be taken from the debate is that BCAs may have negative consequences for achieving a global climate regime, and given that this is ultimately the ideal that we should aim for, BCAs should be implemented with great caution.

VI. A proposal for fair and effective BCA measures

Given the discussion so far, we propose a cautious approach to BCAs which engages those affected by the outcomes of the policy. Although a comprehensive regime may prove to be the most desirable, both in terms of effectiveness and justice, this situation does not appear to be likely in the immediate future. Rather, it does seem inevitable that, at least in the short term, carbon mitigation policies will have to be pursued through unilateral measures. In these circumstances BCAs gain merit as tools to achieve more effective climate mitigation. This paper has shown that BCAs can be compatible with demands of global justice, but only if the policy is implemented to take into account certain recommendations. The remainder of this section defines the necessary measures needed for BCA measures to be both effective and supportive of international fairness. Whilst we do not attempt to go into great detail about how this can actually be achieved in practice, we do make some limited policy suggestions that must be taken into account for BCAs to be both fair and effective.

First, BCAs must take into account the distributional effects, in particular with regard to those who are worst off, and they must be implemented in ways that do not violate individuals' basic human rights. This might involve excluding those goods that are produced by the very poor from any import or export duties.⁷⁸ Unfortunately, given legal norms of non-discrimination, granting exemptions from BCAs to specific countries might make it less likely that a policy is compatible with WTO law.⁷⁹ Alternatively, it might be necessary to ensure that any measures to implement border taxes also commit to compensation payments that avoid causing harm to those that are already extremely poor.

Second, any revenue raised from a BCA measure should be devoted towards either achieving emissions reductions or towards benefitting those actors who are made worse off by the trade policy. Whilst it is very difficult to determine the distributive consequences of a BCA policy, it is clear that the revenue gained by a BCA measure should be distributed for these ends. This is for several reasons. Foremost, this should support fairness in burden-sharing of climate policy. Furthermore, this should prevent states from taking the view that BCA measures are being implemented for the purpose of self-interest. In addition, whereas the

78 Such an exemption from border measures is proposed by *Clara Brandi*, International Trade and Climate Change: Border Adjustment Measures and Developing Countries, German Development Institute Discussion Paper 11 (2010). *Wooders et al.* note that the US Waxman-Markey Bill exempts least developed countries from trade measures for the purpose of complying with the Common But Differentiated Responsibility Principle (*Peter Wooders et al.*, Border Carbon Adjustment and Free Allowances: Responding to Competitiveness and Leakage Concerns (2009), <http://www.oecd.org/sd-roundtable/papersandpublications/43975050.pdf>, last access: 28 June 2014, 48).

79 See also *Christine Kaufmann/Rolf Weber*, Carbon-related border tax adjustment: mitigating climate change or restricting international trade? *World Trade Review* 10 (2011), 497-525

overall effectiveness of BCA measures is sometimes disputable, devoting resources towards carbon mitigation activities obviously constitutes a step towards a more effective climate policy.

Third, it is imperative that BCAs are implemented in accordance with the consultation and involvement of those states affected by the policy. BCAs are likely to place strains on the negotiation process towards a comprehensive climate change regime, as well as multilateral coordination efforts more broadly. Given that such a comprehensive approach is likely to be the most just and effective outcome that we should pursue, any attempt to implement BCAs must complement efforts to achieve such a regime, rather than hindering the process of reaching this end. Since BCAs can be perceived as a step away from a cooperative approach to climate policy, the only way to maintain a mutual understanding between actors is to fully explain and justify the reasons for undertaking these measures to those state actors that the policy affects, and to ensure that each party understands that BCAs are taken as a response to carbon leakage.⁸⁰ BCAs are primarily relevant when climate policy is not globally pursued. BCAs need to be understood as a consequence of unilateral action undertaken to prevent carbon leakage. However, in such a situation, achieving a global treaty is of paramount concern. Any short-term gain made through the introduction of BCAs will not be worthwhile if it even slightly thwarts the long-term chances of a significant global treaty.

Provided that BCAs are designed to meet these criteria, they should represent a minimally fair attempt to address climate change mitigation in a situation of partial compliance in a regulatory regime. It is true that a more ideal theory of international justice would require much more on the part of certain states. However, our starting point is a consideration of how we should proceed, *given the need to achieve carbon mitigation in a non-ideal world*. Since we find that a fundamental critique of BCAs is not warranted, we believe that these measures can well be an appropriate response given the problems of pursuing emission reductions in a situation of partial compliance in a regulatory regime. But achieving a more comprehensive policy regime should always remain the primary aim of policy design. In the event that BCAs are necessary as an interim measure for achieving emissions reductions, they should only be regarded as a second-best policy, rather than a policy that is desirable in the first instance.

80 For this reason, *Susanne Droege* argues that BCAs must be communicated at the international level under the UN (*Susanne Droege*, Using border measures to address carbon flows, *Climate Policy* 11 (2011), 1191-1201, 1197).