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Border Tax Adjustment

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Border Carbon Adjustment

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Acronyms

AB	Appellate Body
BCA	border carbon adjustment
BTA	border tax adjustment
EC	European Commission
ETS	Emissions Trading System
EU	European Union
GATT	General Agreement on Tariffs and Trade
GDP	gross domestic product
IPCC	Intergovernmental Panel on Climate Change
MFN	most favoured nation
OECD	Organisation for Economic Co-operation and Development
U.K.	United Kingdom
UNFCCC	United Nations Framework Convention on Climate Change
U.S.	United States
WTO	World Trade Organization

Summary of key issues, challenges:

- Border carbon adjustments (BCAs) are being proposed in a number of legislative and political fora. They are intended to address competitiveness concerns and carbon leakage, and to help force major developing countries to take on hard commitments in the negotiations over a post-2012 climate regime.
- There is a need for more research on the underlying competitiveness issues, which are important in only a small number of—albeit politically important—sectors, and which may be overstated by top-down economic models.
- The design details of any particular BCA will be key in determining whether it is WTO-legal. Most schemes would face difficulties with the disciplines on non-discrimination. They would then have to rely on GATT’s General Exceptions. The existing case law here suggests that any scheme would have to take account of all sorts of foreign policies in considering whether climate change efforts were comparable to domestic efforts, and it would have to allow individual foreign producers to prove their energy efficiency exceeded the baseline. Both of these requirements would make for complex administration of the scheme. And it would have to be preceded by a good faith attempt to conclude a multilateral agreement, the existing Kyoto Protocol being an example.
- If the scheme covered only basic materials and not manufactures, it would disadvantage domestic manufacturers using those materials as inputs. But covering manufactures would be immensely complex.
- It may be that trade flows would simply re-route to deliver covered goods from countries that are taking strong climate measures, having little effect on the targeted countries.
- It is likely that the reaction of covered countries under such a scheme would be strongly negative, including, at a minimum, a WTO challenge. The larger question, though, is whether BCA in practice, or even as a threat, would in fact backfire on the objective of bringing major developing countries to the climate change negotiating table to take on binding commitments.

Summary of ways forward:

- More research is needed on competitiveness: what sectors are vulnerable and to what extent? Also needed is more research on the available alternatives to BCA: how effective and feasible are they?
- More research is needed on the design of BCA schemes. Is it possible to strike a balance between administrative feasibility and WTO legality/effectiveness?
- It needs to be carefully considered whether the geopolitical implications of implementing a BCA scheme would be positive or negative for the climate negotiations overall.

Introduction

Parties to the UNFCCC and the Kyoto Protocol are currently in talks designed to help shape a climate change regime to follow the Protocol's first commitment period, which ends in 2012. At this point, the nature of that regime and the commitments it will entail is uncertain. But if the IPCC is to be believed—and its projections are the basis for at least some of the post-2012 discussions—the GHG emissions reductions needed will be significant. This is particularly true in developed countries where cuts of 50–80 per cent by 2050 may be necessary to avoid dangerous levels of atmospheric GHG concentration (IPCC, 2007: Chapter 13).

In response to that challenge, a number of countries are pursuing or considering strong domestic action to address climate change. They are doing this either in anticipation of future regime obligations, as part of their obligations under the current treaties, or out of a desire to address the challenge of climate change irrespective of what might develop at the international level. In those countries, one of the key obstacles to such action is the fear that it may put their domestic industries at a disadvantage relative to producers in countries that do not take similarly strong action.¹ This is typically a developed country phenomenon, occasioned by the fact that in the first commitment period developing country Parties to Kyoto, and any non-Parties, have no hard targets for emissions reduction, and by the fear that they may avoid such targets in a post-2012 regime.

One policy option that has been repeatedly proposed to deal with such challenges is border carbon adjustment (BCA),² a trade measure that would try to level the playing field between domestic producers facing costly climate change measures and foreign producers facing very few. While a BCA could conceivably work in conjunction with any number of domestic climate change regimes, it has been proposed to date as a companion to either a domestic carbon tax or a cap-and-trade scheme. In the case of a carbon tax, a BCA would charge imported goods the equivalent of what they would have had to pay had they been produced domestically, in the manner of a border tax adjustment. Such a scheme might also rebate the paid tax to exporters, ensuring that they are not disadvantaged in international markets. In the case of a cap-and-trade scheme, a BCA would force domestic importers or foreign exporters of goods to buy emission permits based on the amount of carbon emitted in the production process, in a requirement analogous to that faced by domestic producers.³

BCAs have typically been touted as means to address competitiveness concerns, as noted above. They might play at least two other useful roles. One is to avoid what is known as carbon leakage. That is, if strong domestic action causes firms to relocate to other countries, or to lose market share to those countries, then the emission reduction achieved at home is simply offset to some extent by an increase in emissions abroad. The fear in fact is that they will be *more* than offset, as production moves to low-standard jurisdictions. While it is closely related to competitiveness, carbon leakage is a distinct concern, focusing on the effectiveness of environmental policy. A final justification for a BCA is that it might act as an effective threat to encourage developing countries to take on hard commitments in the climate change negotiations—in the manner of trade sanctions, or threats of trade sanctions.

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- 1 For an analysis of these competitiveness concerns see Cosby and Tarasofsky (2007).
- 2 Often the whole class of measures discussed here are called border tax adjustments, or BTAs. But requirements to buy into domestic cap-and-trade schemes (discussed below) are more like regulations than taxes, and so adjustment to those schemes cannot rightly be called a tax adjustment.
- 3 Throughout this document *carbon* is used as shorthand for the full spectrum of greenhouse gases, of which *carbon* is the most significant. The Kyoto Protocol covers six such gases.

Like trade sanctions, BCA proposals have been greeted with some scepticism—even antagonism—by exporters to which they are likely to be applied. They argue that such measures amount to unfair protection of domestic industries in developed countries—precisely the sort of protection that the multilateral system of trade was designed to discourage.

Discussion on BCAs is particularly relevant at this time. They have been proposed in two bills before the U.S. Senate, both of which involve a cap-and-trade scheme and both of which foresee BCAs as part of the regime.⁴ The Warner-Lieberman bill would see a Federal Commission certify countries that are not undertaking strong climate change efforts, triggering the requirement that their goods in key sectors would have to buy into the domestic cap-and-trade scheme. It is widely understood that China would be one of the key targets. In Europe as well there is talk of similar requirements. The EC-mandated High Level Group on Competitiveness, Energy and Environmental Policies proposed BCA in its second report in 2006. The second draft version of the EU's third-phase ETS contained a BCA, but that has since been dropped. A succession of senior French politicians has called for some sort of BCA, most recently with a focus on China as well.⁵ In Canada, while the Federal government is not yet considering a BCA, it was called for in a recent analysis by two prominent Canadian academics (Courchene and Allan, 2008).

As the prospect of meaningful national-level action on climate change becomes more likely, and while the state of the post-2012 regime remains undefined, the calls for the use of such measures are bound to increase in volume. And policy-makers are bound to listen. As such, more in-depth analysis is needed to assess the pros and cons of such measures. This paper is a first step toward that sort of analysis. It begins by considering the underlying issue of competitiveness, the legal aspects of BCA use, economic effectiveness, administrative feasibility and, finally, the wider geopolitical implications.

Competitiveness

Not *all* domestic producers will be subject to competitiveness impacts from foreign producers. Some, for example, may not trade their goods across borders in any significant measure. In the literature on this subject (e.g., OECD, 2006: 69; Carbon Trust, 2004: 6) it is widely accepted that the following types of sectors are the ones that might be vulnerable:

- those that use large amounts of energy in the production process;
- those for which there are easy substitutes, either in the form of imports of the same good (highly traded goods), or in the form of different goods that can serve the same purpose; and
- those for which there are no cost-effective technologies available or in the pipeline that would lower carbon intensity.

The differentiated nature of competitiveness impacts has clear implications for the design of any BCA scheme, which should ideally only cover those sectors that are truly vulnerable. A number of studies have tried to assess the extent of vulnerability of various sectors, using permutations of the criteria described above, and the same few sectors tend to stand out as particularly problematic: steel, aluminum, paper, chemicals and cement (Carbon Trust, 2004; Reinaud, 2005; Houcade *et al.*, 2007; and Houser *et al.*, 2008).

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4 S-1766, Bingaman-Specter Low Carbon Economy Act, and S-2191 Lieberman-Warner, America's Climate Security Act.

5 Prime Minister Dominique de Villepin proposed BCAs in November 2006, and President Jacques Chirac repeated the proposal in January 2007. More recently, President Nicolas Sarkozy warned of such measures in a speech made in Beijing, November 2007, pointedly urging China to shoulder its global environmental responsibilities.

The extent of vulnerability will of course vary from country to country, depending on predominant production techniques and energy sources, and even from facility to facility. In one U.K.-based study, the costs faced by domestic producers in the top five sectors ranged from over 40 per cent to just over 10 per cent of value added (Hourcade *et al.*, 2007). It also found that those sectors made up just over 0.5 per cent of GDP.

While this sort of research is indispensable as a basis for sound policy, it typically suffers from two weaknesses that may cause it to overstate the extent of vulnerability. For one thing, most models assume unilateral action—the implementing country takes action, but no other country does. This may be a necessary simplifying assumption, but in the final event it is not realistic. For another thing, as noted by Sijm (2004), top-down general equilibrium models for assessing the impacts of domestic policies will typically understate the ability of those policies to drive technological change that might blunt competitiveness impacts in the longer term.

Legal aspects

A border carbon adjustment is a trade measure and, as such, would be covered by the rules of international trade. These are embodied in the World Trade Organization (WTO), as well as in numerous regional and bilateral trade agreements, but only the former is considered here, the relevant obligations contained in the latter being typically similar.

It is impossible to say in the abstract whether BCA would or would not breach WTO obligations, since any such judgement would depend fundamentally on how the scheme was designed. But it is possible to describe what WTO law says about that design.

First, it should not discriminate between domestic producers and foreign producers of like products—both should be treated similarly (national treatment principle). Arguably this is not a problem if the tax or cap-and-trade scheme can be made to have equal effect on domestic and imported goods.⁶ If domestic producers in certain sectors are given free allocations of emission permits, for example, then their foreign counterparts must also get such treatment.⁷

Second, it should not discriminate between like products based on the country of production (most favoured nation, or the MFN, principle). The rules for like imported products should not favour any importing country over another. This might pose problems for schemes designed to focus on only a few key foreign countries. But before getting to that question, it is important to note the importance of what is meant by “like” products. Is a tonne of cement produced with solar energy “like” a tonne of cement produced using coal? Is a ream of paper from a country with no climate change policies “like” a ream of paper from an Annex B Party to the Kyoto Protocol?⁸ This is a critically important question.

The WTO’s Appellate Body has ruled that likeness “is, fundamentally, a determination about the nature and extent of a competitiveness relationship between and among products,”⁹ which would seem to mean that steel is steel, and paper is paper, no matter how it’s produced. Going further, likeness has been defined as being determined by four criteria: i) the (physical) properties, nature and quality of the products; (ii) the end-uses of the products; (iii) consumers’ perceptions and behaviour in respect of the products; and (iv)

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6 For a detailed argument of this proposition see Pauwelyn (2007).

7 Free allocation might also be regarded as an actionable subsidy under the Agreement on Subsidies and Countervailing Measures. See de Cendra (2006).

8 The Parties in Annex B of the Kyoto Protocol have subscribed to specific targets for reduction of GHG emissions.

9 See *European Communities – Measures Affecting Asbestos and Asbestos-Containing Products*, Report of the Appellate Body, (WT/DS135/AB/R) 12 March 2001, para. 99.

the tariff classification of the products.¹⁰ It might be argued that consumers perceive dirty steel as different from green steel, but this would be something of a legal long shot.¹¹ In the end, guided by all these criteria, a WTO dispute panel would probably consider the two products to be “like.”

The implication for MFN is that any BCA must treat steel from different foreign producing countries equally. That is, the United States could not treat steel from China differently from steel from the European Union. So a BCA could neither discriminate on the basis of a country’s climate change policies, nor choose to just focus on the trading partners of major commercial interest, without violating MFN.

This would not be the end of the story, however, since such a measure might still be saved by recourse to GATT General Exceptions, found in Article XX. These allow members to breach GATT rules in certain circumstances. One possible justification for such a breach is for measures necessary to protect human, animal or plant life or health. Another is for measures relating to the conservation of exhaustible natural resources (provided such measures also apply to domestic production and consumption). Either might be applicable to BCAs that failed the MFN test.

A full analysis of how these two exceptions might or might not be applicable to BCAs is beyond the scope of this paper.¹² But if we assume, as seems likely, that BCAs would be accepted as covered by one of these exceptions, what does the case law tell us about how they must be designed?

There are at least three requirements of interest. First, BCAs must be designed to take into account *all* policies and measures implemented by its trading partners that might have an impact on climate change.¹³ For example, in deciding whether a given exporting country is taking actions comparable to EU actions, it would not be permissible to require a cap-and-trade system like the one in force in the EU. The EU would have to consider whether a range of other policies (such as renewable portfolio standards, energy efficiency targets, technology requirements and fiscal measures) might, in the end, be delivering an equivalent result.

Second, BCAs must also take into account the differences prevailing among individual producers.¹⁴ For example, it would be unacceptable to simply set a national baseline of carbon intensity of production for all producers from a given sector within a country. This would unfairly penalize highly efficient producers from countries where the average efficiency happened to be low (and therefore carbon intensity happened to be high). In effect this would mean firm-by-firm (or perhaps even factory-by-factory) calculations of embodied carbon.

Third, BCAs as a unilateral measure to enforce environmental policies should only be implemented after a concerted effort to gain multilateral agreement to address the problem.¹⁵ In other words, before implementing a

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¹⁰ *Ibid*, para. 101.

¹¹ The thin odds of success here are related to two facts: first, as emphasized in *EC-Asbestos* (para. 109, *inter alia*), a full picture of likeness can only emerge as a result of examining *all four* criteria, and in this case only one of them argues against likeness; second, even were consumer behaviour to be elevated so as to be predominant in this judgement, it would be difficult to argue that consumers prefer intermediate goods like steel that are efficiently produced, there being no markets or eco-labelling schemes one could point to that would support the claim.

¹² But see for example Pauwelyn (2007); de Cendra (2006); Charnovitz (2003); Ismer and Neuhoff (2004); Biermann and Brohm (2003).

¹³ See *United States – Import Prohibition of Certain Shrimp and Shrimp Products*, Report of the Appellate Body, (WT/DS58/AB/R) 12 October 1998, paras. 161-164.

¹⁴ See *Ibid*, para. 165; also *United States – Standards for Reformulated and Conventional Gasoline*, (WT/DS2/AB/R), 29 April 1996, p. 28. (But note that in *US-Gasoline* the ready availability of usable data and methodologies was a central factor in the AB’s determination.)

¹⁵ Technically this is not what the Appellate Body said in *US-Shrimp*, though it is frequently cited as such. In its discussion on “unjustifiable discrimination” the Appellate Body said that a multilateral approach was much to be preferred, but in the end ruled against the U.S. not because of a lack of such an approach as such, but because it had taken such an approach with some states and not with others. That said, the language of the ruling *strongly* suggests that multilateral negotiations would be considered a prerequisite to a WTO-legal use of such a unilateral measure.

BCA, there should have been good faith (but ultimately unsuccessful) efforts to reach a cooperative multilateral solution to the problems that the BCA would address. This requirement does not go so much to BCA design, but to the groundwork that must precede it. It should be noted that the Kyoto Protocol would almost certainly be seen as a successful multilateral effort to address the problem, meaning any application of BCAs to Kyoto Parties such as China would be questionable from a legal standpoint. China is, after all, a fully compliant Party to a multilateral effort to address climate change.

In the end it must be borne in mind that even a definitive finding of WTO incompatibility would not be the final word on BCAs. In theory it would be possible for the members to amend WTO law, reach specialized agreements or grant waivers that allowed for their use. This would, however, involve consensus (or in some cases majority), meaning agreement by a substantial number of WTO members that the problems were real and urgent enough, and the proposed solutions fair and effective enough, to require such actions.

Effectiveness

Some aspects of BCA design will influence the degree to which they are successful in achieving their basic objectives, and three of these are surveyed here. First is the question of whether the scheme covers only basic materials (such as raw aluminum) or also covers manufactured products made from those materials (such as aluminum frame bicycles). As described in the next section, a broader scheme will be particularly difficult to manage, but a scheme that is more narrowly cast may have unintended adverse impacts. Specifically, it will raise the price of aluminum as an input good to domestic manufacturers of, say, bicycles, but it will not levy any charges on imported bicycles. Such a scheme protects the aluminum sector from competitiveness impacts, but not the sectors that add value to aluminum. It is worth noting that most developed countries depend more heavily on sectors providing value added than on production of basic raw materials.

A second question is whether foreign producers will simply be able to evade the controls imposed by a BCA. Houser *et al.* (2008) point out that the United States imports five million tons of steel from China annually and two million tons from Japan. They argue that a scheme that imposed border adjustment on Chinese steel might simply cause increased flows from China to Japan, and increased flows from Japan to the United States, without in the end protecting U.S. steel producers. It is also possible to imagine scenarios where partially finished products are shipped to Annex B Kyoto Parties for finishing and final export from those Parties to the implementing state. To stick with the example of steel, India might export hot-rolled steel to Canada for cold rolling, and the finished product could then be exported to the United States as originating from Canada.

Finally, a BCA should be evaluated on its potential leverage—the extent to which it might in fact exert pressure on target countries to adopt stricter policies, or to take on tough treaty obligations. This potential will of course vary from country to country and sector to sector. In those cases, where the percentage of a given good exported to the implementing country is particularly small, imposing the BCA will likely have little or no policy impact on the exporter.

Administrative feasibility

The concerns surveyed here stem primarily from the legal and effectiveness aspects surveyed above. In some aspects of BCA design there may be an inherent tension between administrative feasibility on the one hand, and effectiveness or WTO legality on the other.

It was noted above that WTO case law dictates what BCA must look like, including a requirement that would seem to rule out the use of nationally established baselines. That is, it would be considered unfair to adjust at the border for a given shipment of paper based on the national average energy intensity of paper production. Each producer should have the right to establish its own carbon footprint. This would be extremely complex to administer, and would involve a plant-by-plant determination of carbon emitted, as well as some sort of accredited verification process. Not only would the necessary data be unavailable for most producers (particularly in developing countries), it is also unlikely that the national authorities in those countries would rush to establish requirements that would make it available for that purpose.

Along the same lines, an ideal BCA would have to determine whether the exporting country or firm was in fact making efforts to address climate change that were comparable to those made in the importing country. That is, BCA should be applied only to the extent that it levels the playing field, but first we must find out how far from level it is. This is no easy task. China, for example, has no cap-and-trade scheme, nor does it impose a carbon tax, but it has made enormous efforts to increase energy efficiency (to the point of fiscally punishing or closing down energy-intensive producers) and introduce renewable energy sources (Cosbey, forthcoming). But these are not called climate change measures, and it would be a challenge to devise a common metric by which such policies could be compared to the policies of a country imposing a BCA.

It was also noted that BCA should avoid covering only basic goods, so as to avoid punishing domestic manufacturers that use them as inputs. In other words, BCA should cover both aluminum and bicycles. But this would require an enormous amount of data, and a highly convoluted system of accounting, given the global nature of production chains today. Manufactured goods are typically assembled from a host of raw materials and semi-finished intermediate goods, often sourced from a number of different countries. Chasing down the full carbon footprint of these sorts of supply chains would be daunting enough even if the necessary data existed, but for the most part it does not.

In the end any BCA would have to vary from the ideal. The question to be posed in each case would be to what extent in doing so it strayed from environmental effectiveness and WTO legality. Finding the right balance would not be easy.

Geopolitical implications

One of the three justifications for BCAs, described at the beginning of this paper, was as a lever to bring reluctant countries to the negotiating table in the climate change talks, or otherwise to encourage them to take strong action on climate change. Any proposed BCA must be assessed on this criterion as a matter of primary importance.

It was noted above that some countries may not have particularly large trade flows to the implementing country in the vulnerable sectors. In such cases, the leverage will be correspondingly small. Houser *et al.* (2008) argue, for example, in the context of U.S. proposals to implement BCAs, that China's steel exports to the United States amount to less than one per cent of total production.

More fundamental, however, is the need to consider what impact BCAs would have on the climate negotiation process. In particular, is it likely that they could act as a lever to encourage non-Annex B Parties to sign up for hard targets in the post-2012 context? As partial answer to this question, it should be recalled how developing countries reacted to the U.S. imposition of the measure that gives us much of the WTO dispute settlement material relevant to BCAs—a measure to ban imports of shrimp caught in ways that killed endangered sea turtles. To describe the reactions as vitriolic would be an understatement. Countries including India, Malaysia, Pakistan and Thailand argued forcefully that the measure amounted to eco-

imperialism: the United States determining how other countries should manage their domestic affairs. They also argued that it was disguised protectionism, designed to restrict their exports and unfairly shelter U.S. producers. The measure was taken to the WTO's Dispute Settlement Body and argued vigorously there by all four countries, joined by Australia, Ecuador, European Commission, Hong Kong (China) and Nigeria as third participants. After their defeat under the Appellate Body rulings, several of these countries railed at the result, arguing in an unprecedented manner that the Appellate Body had incorrectly overstepped its bounds. In short, the measure proved divisive.

It is worth recalling that in the *Shrimp-Turtle* case the United States was arguably legitimately trying to protect the environment, and not its producers (at least as a first order objective), and that it had the benefit of clean hands, environmentally speaking, having implemented the very measures to which it was asking others to adhere. BCAs might have neither of these benefits, being explicitly aimed at competitiveness concerns, and potentially being implemented by those Parties that have done historically, and continue to do, the most global damage in terms of climate change. It therefore might prove even more unpopular than the U.S. shrimp protection measures, if that is possible.

It is difficult to predict how such measures would eventually play out in the climate change negotiations. But certainly before any BCA scheme is implemented the answer to this question must be carefully explored.

On the other hand, hearsay seems to indicate that the *threat* of BCAs is having an impact on some developing countries' domestic policy-making processes, where the prospect of losing U.S. markets is a key consideration. This sort of argument is tough to substantiate, but if it is true it also needs to be considered. Some analysts argue that the best use for BCAs is for them to be seen but not used. Such a strategy would have to weigh the risk that, once created, BCAs would pass out of the control of their creators to be used in ways deemed useful by the legislators of the day.

Concluding Thoughts

More work is needed to adequately underpin the decisions policy-makers will be making in the near future on the implementation of BCA schemes. In particular, additional research is needed on competitiveness to identify what sectors are vulnerable and to what extent. There should also be more research on the available alternatives to BCA, and their effectiveness and feasibility.

Research is also needed to address the design issues that have been raised in this paper and elsewhere. Is it possible, in the end, to strike a workable balance between administrative feasibility on the one hand, and effectiveness and WTO legality on the other?

Finally, there needs to be more thought given to the wider implications of BCA schemes, along the lines of the geopolitical discussion above. At the end of the day, would such schemes foster or frustrate progress in the ongoing international climate change negotiations?

References and Further Reading

- Biermann, Frank and Rainer Brohm, 2003. *Implementing the Kyoto Protocol without the United States: The Strategic Role of Energy Tax Adjustments at the Border*. Potsdam: The Global Governance Project.
- Carbon Trust, 2004. *The European Emissions Trading Scheme: Implications for industrial competitiveness*. London: The Carbon Trust.
- Charnovitz, Steven, 2003. "Trade and Climate: Potential Conflicts and Synergies," in *Beyond Kyoto – Advancing the International Effort against Climate change*. Washington, D.C.: Pew Center for Global Climate Change.
- Cosbey, Aaron, forthcoming. *Sustainable China Trade: A Conceptual Framework*. Winnipeg: International Institute for Sustainable Development.
- Cosbey, Aaron and Richard Tarasofsky, 2007. *Climate Change, Competitiveness and Trade*. London: Chatham House.
- Courchene, Thomas J. and John R. Allan, 2008. "Climate Change: The case for a carbon tariff/tax." *Policy Options* March: 59-64.
- De Cendra, Javier, 2006. "Can Emissions Trading Schemes be Coupled with Border Tax Adjustments? An Analysis vis-à-vis WTO Law." *RECIEL* 15(2):131-145.
- Hourcade, Jean Charles, Damien Demailley, Karsten Neuhoff and Misato Sato, 2007. *Climate Strategies Report: Differentiation and Dynamics of EU ETS Industrial Competitiveness Impacts*. Bonn: Climate Strategies.
- Houser, Trevor, Rob Bradley, Britt Childs, Jacob Werksman and Robert Heilmayr, 2008. *Levelling the Carbon Playing Field: International Competition and US climate policy design*. Washington, D.C.: Peterson Institute for International Economics/World Resources Institute.
- Intergovernmental Panel on Climate Change, 2007. *Working Group III Contribution to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change – Climate change 2007: Mitigation of climate change*. Geneva: IPCC Secretariat.
- Ismer, Roland and Karsten Neuhoff, 2004. *Border Tax Adjustments: A Feasible Way to Address Nonparticipation in Emission Trading*. Cambridge Working Papers in Economics 0409. The Cambridge MIT Institute.
- OECD, 2006. "The Sectoral Competitiveness Issue – Theoretical Studies," in *The Political Economy of Environmentally Related Taxes*. Paris: OECD. pp. 67-87.
- Pauwelyn, Joost, 2007. *US Federal Climate Policy and Competitiveness Concerns: The Limits and Options of International Trade Law*. Working Paper NI WP 07-02, Nicholas Institute for Environmental Policy Solutions. Durham: Duke University.
- Reinaud, Julia, 2005. *Industrial Competitiveness under the European Union Emissions Trading Scheme*. (IEA Information Paper). Paris: International Energy Agency.
- Sijm, Jos P.M., 2004. *Induced Technological Change and Spillovers in Climate Policy Modelling: An assessment*. (ECN-C-04-073). Petten: Energy Research Centre of the Netherlands.