

A Guide for the Concerned

Guidance on the elaboration and implementation of border carbon adjustment

This text is the product of the drafting group's discussions at their 2011 Geneva meeting. It has not, however, been formally approved by the group. As such, it should not be distributed without permission, or cited.

Draft version 12
October 2011

Table of Contents

ii. Preface: Why did we create this guidance?.....	ii
iii. Glossary of terms	iii
1. Starting points.....	1
What is BCA?.....	1
Why apply BCA?	1
Criteria for judging BCA regime options	2
2. Motivations	3
3. Scope of applicability	5
Exemptions.....	5
Identifying goods/sectors to be covered	9
4. Determining the level and type of adjustment	11
Assessing the carbon content.....	11
Exemptions to the adjustment level.....	16
Type of adjustment.....	16
5. The application of BCA to exports	18
6. Use of revenues from import adjustments	19
7. Other design guidance	20
Pre-establishment guidance:	20
Operational guidance:	20
Sunset guidance:	20
Annex I: Composition of the drafting group.....	22
Annex II: Suggested reading	23

i. Preface: Why did we create this guidance?

1. We began considering this guidance because the U.S. was actively considering including border carbon adjustment (BCA – fully defined below) in climate legislation before the Congress in 2009, and there was the possibility that the EU would also decide to use such a mechanism, by including importers in the third phase of its Emissions Trading System.
2. The urgency of both those drivers has abated. However, we assume that BCA will endure as a proposed complement to unilateral climate policies, and may eventually feature as part of some countries’ climate regimes. It has thus far endured for over a decade as a serious policy proposal, it continues to be strongly advocated today, and it is an intuitively appealing option for countries considering unilateral climate policies in the absence of a multilateral climate regime.
3. This guidance is intended to:
 - Help policy makers decide on an informed basis whether to adopt BCA;
 - If they do decide to adopt BCA, help policy makers avoid adverse outcomes to the extent possible when elaborating and implementing the BCA regime, and;
 - Help exporting nations assess schemes under which they might be targeted.
4. Our aim is that BCA should be formulated and carried out in a manner that is effective in reducing global GHG emissions, effective in achieving its intended goals at the national level, transparent, and coherent with the principles of the multilateral system of trade, the principles of the multilateral climate change regime and other internationally agreed principles and objectives.
5. We provide this guidance without making any judgments as to the desirability of BCA. We note at the outset that BCA is at best a fall-back measure in the event of collective failure at the international level to define appropriate levels of national action. At worst BCA can be a coercive, divisive and highly imperfect policy tool with serious methodological challenges. While this guidance does not measure BCA against policy alternatives such as free allocation of allowances, we recommend that it be judged against a full set of alternatives to meet the prescribed goals.
6. The guidance below begins by setting out starting points, defining what we mean by leakage and competitiveness, setting out what we see as the three basic motivations for using BCA and describing a set of criteria that will be used to evaluate regime options at a number of points in the guidance. It then critically assesses the three enunciated motivations for BCA. It next explores how to identify those domestic sectors that should be covered by a BCA, followed by a focus on what countries should be covered. It then explores how to determine the appropriate level of adjustment, and what to do with the collected revenues. It then offers guidance on adjustment for exports, and in closing describes the governance structures that should be in place to ensure fair practice in the application and elaboration of BCA regimes.

ii. Glossary of terms

BCA

Benchmark

Carbon

CBDR

GATT

Leakage

MFN

TBT

UNFCCC

Others?

1. Starting points

What is BCA?

7. A border carbon adjustment is a mandated change to the cost of traded products that seeks to make the products' prices in destination markets reflect the costs they *would have* incurred had they been regulated under the destination market's greenhouse gas emission regime.¹ The adjustment can be applied either to imports or to exports. In the case of imports the charge would reflect the GHG emissions associated with imported products and the price of emissions faced by comparable products in the destination market. If applied to exports the adjustment would be a rebate of emissions charges levied in the country of origin. In a seamless system of globally applied BCA this would be followed by border adjustment in the destination market, with the objective that all products in their destination markets should reflect domestic emissions prices. This is the same arithmetic that guides VAT and excise duty adjustments at the point of import and export, though BCA is considerably more complex, as described below.

Why apply BCA?

8. The basic motivations behind BCA are:
 - **Reducing risks of leakage.** Leakage is an increase in GHG emissions in foreign jurisdictions that results from climate policies taken in an implementing jurisdiction;²
 - **Maintaining industry competitiveness.** Related to leakage, but distinct, this motivation is concerned about the loss of profits, market share, production, investment and related jobs. Those losses could be due to industry relocating to jurisdictions with lower costs of compliance, to industry losing market share to firms from such low-cost jurisdiction, or to diversion of new investment to those same jurisdictions.
 - **Leverage.** BCA, or the threat of BCA, might be used to bring pressure on other countries to adopt policies to reduce GHG emissions.
9. These three options are assessed in the section that follows: *Motivations*. At this point, we note that competitiveness and leakage concerns can be addressed in a number of ways. Best among these is broad-based international agreement on the acceptable levels and/or means of effort to address climate change. Indeed, global action to reduce carbon emissions is the only mechanism that can address all of the leakage channels, including

¹ We use the term "carbon" in the loose sense that includes carbon equivalent of other greenhouse gases.

² Leakage can occur via any of at least three distinct channels: through the relocation of existing economic activity to countries with lower costs of regulation (either through plant relocation or through domestic firms losing market share to firms with lower costs of regulatory compliance); through the diversion of new investment from the regulating country to countries with lower costs of regulation; or when regulation forces price changes that increases emissions in other countries (for example, regulations might lower domestic demand for fossil fuels, lowering the global price, increasing demand elsewhere).

leakage related to global fossil fuel market responses. But in the absence of that ideal, other climate policies will be pursued at the national level, such as carbon taxes, cap-and-trade schemes and other carbon constraints.³

10. The competitiveness and leakage issues that such national policies engender can be addressed through a variety of means, including special treatment to vulnerable sectors (e.g., free allocation of allowances, preferential tax treatment, or even wholesale exclusion from the climate policy), international sectoral agreements, GHG intensity standards, bilateral or regional accords, or BCA. Each of these policy options has many possible permutations, and each has its inherent strengths and weaknesses. It is beyond the scope of this guidance to go into detailed comparison of the various options that compete with BCA to address competitiveness and leakage concerns.

Criteria for judging BCA regime options

11. Throughout this guidance we will assess various regime design options on the basis of a consistent set of criteria. They are:
 - **Global environmental effectiveness:** does the regime work to reduce GHG emissions at a global level?
 - **National policy effectiveness:** Does the regime work to fulfill national climate change policy objectives, primarily reducing national GHG emissions?
 - **Feasibility:** Is the regime cost effective, and does its implementation impose a reasonable administrative burden?
 - **Policy coherence:** Is the regime consistent with the principles and objectives of international trade and investment law, of the international climate regime, or of other international accords (both hard law and soft law)?
 - **Good governance:** Would the regime be implemented in accordance with commonly accepted governance principles such as transparency, predictability, ease of use and procedural fairness?

³ The nature of these accompanying measures to address climate change in the implementing country are important, though they are not addressed to any great extent here. It will, for example, be much simpler to implement a BCA regime as an accompaniment to domestic policies that involve carbon pricing (such as carbon taxes or cap-and-trade) than to have BCA accompany other sorts of regulatory efforts.

2. Motivations

12. We noted above that there were at least three possible motivations for the use of BCA. A first piece of guidance is that policy makers should be explicit about their motivations, since the design of any BCA regime will be different in important respects if it is aimed at one or another of these motivations.
13. A second piece of guidance is that preventing leakage is the only motivation we consider appropriate for the use of BCA. Preventing leakage is ultimately an environmental motivation, concerned with making domestic climate policies effective. Even if domestic climate policies are cast as targeting domestic emissions reductions, leakage can undermine the ultimate goals since GHG emissions are equally damaging no matter where they occur.

Leakage

14. Carbon leakage can occur whenever emissions are not capped, either explicitly by a cap-and-trade policy or by a hard national target. For example, a carbon tax allows national emissions to respond to economic changes, so as more countries regulate carbon, emissions can technically “leak” even to countries with comprehensive carbon pricing. On the other hand, hard caps—even weak ones with low associated carbon prices, or firm national targets under which some sectors remain unregulated—mean that overall emissions in that country cannot expand, regardless of the actions of other countries. Thus, strict definitions of leakage may conflict with notions of “unfair” carbon shifting. Furthermore, national-level leakage, which depends on policy form as much as stringency, differs from sector-level leakage, which is more related to competitiveness effects.

Competitiveness

15. Preventing loss of competitiveness, by contrast, is a purely economic concern -- concern for the effects of carbon regulation on trade-sensitive sectors. Part of this motivation is related to the emissions leakage that would be associated with the relocation of economic activity through trade, which can be especially pronounced in certain energy-intensive trade-exposed (EITE) sectors. Another motivation for addressing sector-level competitiveness concerns is to shore up political support (or defuse political opposition) from powerful special interests, labor groups, and elected representatives from industrial communities. One can thus argue that preserving competitiveness, as a precondition for the domestic political acceptability of stringent economy-wide climate policy, can contribute to the global goal of emissions reductions. However, competitiveness motivations often predate climate policy, as many of the major EITE manufacturing sectors already operate in the context of economic trends that foresee continued shifts away from industrialized to emerging economies. Responding to these motivations for protection would thwart legitimate economic drivers of comparative advantage and trade. Thus, measures addressing competitiveness should be restricted to mitigating the changes associated with the climate policy and no more.

16. It also bears noting that preventing the loss of competitiveness is not seen as a valid rationale for breaching trade law obligations. The international community has agreed that while there are some legitimate objectives that can trump trade law—including protection of plant, animal and human health, and conservation of scarce resources—preserving competitiveness is not one of them. BCA as an instrument has an uncertain status under trade law, and in the end regime design would be important to any final determination. Motivation would be one of the key deciding features.
17. An additional argument against competitiveness as an appropriate motivator for BCA is that in many cases the less problematic motivation of preventing leakage should also help prevent loss of competitiveness. There is one type of exception, discussed below: if a national exemption is granted to a country with a national emissions cap, *sectoral* emissions in that country may rise as leakage takes place to a given sector. But the effect of the cap would be that these would have to be compensated by emissions reductions elsewhere in the economy, so global emissions would not rise.

Leverage

18. The leverage motivation reflects a desire to use BCA to pressure other countries to take actions to reduce their emissions. The desired actions might take the form of a national commitment, limiting the scope for overall leakage, or sectoral agreements, which would deal with competitiveness related leakage in key sectors. Leverage as defined here is strictly about trying to change national policies, as opposed to trying to change firm-level behaviour.
19. We see leverage as an inappropriate motivation for BCA. For one thing it is likely to be ineffective. In many cases the export stream for a product is a small percentage of total country-level production, meaning limited impact at the sectoral level, and so limited leverage to affect national policies. For another thing, it is possible that BCA as a coercive lever may backfire; the tool is so controversial and divisive that it may actually impair efforts to achieve multilateral climate agreement, rather than impel progress, meaning a missed opportunity for mitigation. Trade is already becoming an increasingly problematic area in the climate negotiations, in part fuelled by concerns about the potential use of BCAs. A particular difficulty in using BCA for leverage is the conflict this creates with the UNFCCC principle of common but differentiated responsibility (CBDR), which recognizes that developing countries should not be expected to implement the same kinds of policies as developed countries.
20. Most policy making processes are, of necessity, exercises in balancing a number of different policy objectives. As such, in the real world it is unlikely that any BCA regime might be intended to fulfil only one of the motivations described above. But to the extent possible the guidance that follows tries to present policy makers with regime design options that reflect a focus on preventing leakage as the only appropriate motivation for BCA.

3. *Scope of applicability*

21. The scope of a BCA's applicability determines which products or sectors the regime will cover, and which countries. We will first discuss what exemptions from coverage should be in place, and then discuss how to identify which non-exempt products and sectors should be covered.

Exemptions

22. There are a number of possible exemptions that could affect coverage under a BCA regime. They include exemptions for:

- Parties to a multilateral climate change agreement;
- Countries taking adequate action: national cap on emissions;
- Countries taking adequate action: national action other than emission cap;
- Countries taking adequate action: cap or equivalent on specific sector;
- Least-developed countries (LDCs) and low-income countries (LICs);
- Sectors and goods with minimal levels of imports;
- Sectors, goods or countries exempted by administrative discretion.

23. Each of these can be examined in light of the criteria identified above. The result is illustrated in Table 1, with more in-depth discussion following.

Table 1: Options for exemptions from coverage

Exemptions	Global envl effectiveness	National policy effectiveness	Feasibility	Policy coherence	Good governance
Party to multilateral agreement	risk that "leverage" may backfire; need trans-shipment provisions		difficult to define what is an adequate agreement, who is in compliance	creates problems with GATT MFN obligation	
National emissions cap	no risk of leakage; need trans-shipment provisions	may allow for <i>sectoral</i> leakage, even if not global	if equivalent action allowed, difficult to calculate effects	creates problems with GATT MFN obligation; probably saved by GATT Art. XX	
Adequate national action	leakage not prevented; need trans-shipment provisions		difficult to define what is adequate action	can be defined so as to respect CBDR, SDT creates problems with GATT MFN obligation	lack of predictability stems from difficulty defining adequate action
Sectoral emissions cap	no risk of leakage; need trans-shipment provisions		if equivalent action allowed, difficult to calculate effects		
LDCs and LICs	probably minimal impact from exempting them; need trans-shipment provisions		fewer countries makes it administratively simpler	creates problems with GATT MFN obligation creates coherence with CBDR, S&DT	
Minimal trade volumes (sector/good)	minimal impact from exempting		fewer goods/sectors makes it administratively simpler		
Exempted by administration (country)	uncertain impacts - depends on amount of emissions covered; needs trans-shipment provisions	uncertain impacts - depends on amount of emissions covered	fewer countries makes it administratively simpler	creates problems with GATT MFN obligation	lacks predictability, transparency

24. *Exempting countries that are party to a multilateral agreement on climate change.* This is in essence a use of BCA for leverage purposes, with the drawbacks argued above: primarily that it could backfire and make international agreement less likely. This exemption, like any national-level exemption, would need to be accompanied by strong trans-shipment provisions (see Box 1). These would seek to ensure that any products coming from the exempted country had in fact undergone a substantial transformation there. Otherwise it would be possible for non-exempted countries to ship products there for re-export, in an attempt to avoid coverage. It would require a definition of an adequate multilateral agreement, and perhaps even some definition of countries' compliance with that agreement. This and the trans-shipment provisions would increase administrative complexity. Because it is a national-level exemption, it creates problems with GATT's Article I obligation for most-favoured-nation treatment, which requires that no nation be favoured above any other in the treatment of goods.

25. *Exempting countries that implement a national emissions cap.* If a country has a national cap, it is by definition impossible for there to be leakage, so this is a globally effective exemption. Even if there is leakage at a sectoral level – some production shifts to the foreign country – the associated increases from the sector will have to be compensated by reduced emissions from some other sector to maintain the cap (this assumes that the cap is set low enough to be actually limiting), so global emissions do not rise. It would be administratively challenging to allow actions *equivalent* to a national cap—such as a carbon tax—to be the basis for an exemption, since it would involve calculating equivalent impact.

It would probably also destroy the assumption that sectoral leakage would be compensated by reductions in some other sector. As with the previous national-level exemption, this exemption would require strong trans-shipment provisions, somewhat increasing administrative complexity (see Box 1). Because it is a national-level exemption, this exemption creates problems with GATT's Article I obligation for most-favoured-nation treatment, but it could probably be justified under GATT's Article XX which allows states to take certain measures that are aimed, among other things, at genuinely protecting the environment. This is because there is such a strong relationship between the defining national characteristic (an emissions cap) and the environmental objective (preventing leakage).

26. *Exempting countries that take "adequate" national actions, other than national caps.* Anything other than a cap is susceptible to leakage. This exemption is administratively difficult and potentially lacks predictability, because of the challenge of defining *ex ante* what constitutes adequate action. For example, how high would a carbon tax have to be, and what coverage would be needed, in order to qualify? A strong advantage to this exemption is the ability to use it to bring the BCA regime into greater coherence with the principle of CBDR (and SDT). This would involve either or both of: defining adequacy as less than the level of effort expended in the implementing country, or; adopting a flexible approach that accounts for policies not explicitly labelled climate change policies (e.g., energy taxes and industrial efficiency efforts that reduce GHG emissions).⁴ The latter would also help in terms of coherence with trade law, which frowns on specifying the policy tool to be used and prefers specification of the outcome. This exemption would create problems with GATT's MFN provisions, since it distinguishes at the national level, but if properly designed (see above) it might be saved by GATT's Article XX exceptions. This exemption would require strong trans-shipment provisions.
27. *Exempting countries that implement a sectoral cap.* If a country caps the emissions from a given sector, this assures that no leakage will take place with respect to that sector. If it takes actions that are equivalent to a sectoral cap, such as taxes on the exports from that sector, this adds a level of administrative complexity since equivalence would have to be calculated. But provided this calculation could be done, leakage is still addressed (unlike the case for measures equivalent to a *national* cap). This exemption, like the national-level exemptions, would need to be accompanied by strong provisions on trans-shipment, in this case just covering the sector in question (see Box 1). There is no trade law problem with

⁴ It is suggested here that even non-climate-related policies (such as energy security) should count when the home country determines adequacy of effort. For one thing, such policies have major climate benefits. For another, it is impossible in practice to demonstrate the intent of a policy – countries could simply rename their policies to make them appear to be climate-motivated. But this is still an open question. On the other side of this argument, note that it is extremely difficult to compare costs across different sorts of policy tools. It would be much simpler to only consider carbon taxes or ETS as schemes that count in cost comparisons, or that count in determining adequacy of effort.

non-discrimination here, since the discrimination is based on sectoral characteristics, rather than on country characteristics.⁵

28. *Exempting LDCs and LICs.* An exemption for LDCs and LICs would help bring the measure into policy coherence with the UNFCCC principle of CBDR, the WTO principle of special and differential treatment, and with other international objectives dedicated to development, such as the Millennium Development Goals. It is not clear, however, that such an exemption would have much palpable impact, since almost none of these countries export the type of goods that are targeted by BCA. Moreover, this exemption being a national-level exemption, it creates problems with GATT's Article I obligation for most-favoured-nation treatment, which requires that no nation be favoured above any other in the treatment of goods. It might be carved out by the WTO's Enabling Clause, which exempts some forms of special developing country tariff treatment from MFN obligations, but that is unlikely. The Enabling Clause applies to discriminatory trade measures that have as their objective development in the target countries, but it specifically does *not* cover those measures that "raise barriers to or create undue difficulties for the trade of any other [i.e., non-exempted] contracting parties."⁶
29. *Exempting goods/sectors with minimal levels of imports.* By definition such a *de minimus* clause would have minimal impact on global GHG emissions. This exemption would be founded on the principle that at some level the embedded GHGs in a product do not justify the cost of tracking and internalization. It is likely that this would mean a cut-off point that excluded manufactured goods from coverage, with payoffs in terms of feasibility: it would make the scheme administratively simpler and more cost effective.
30. *Exempting goods by means of administrative flexibility.* This would involve the ability of the implementing government at some level to decide to exempt certain countries, or products from certain countries, from coverage, presumably as a result of considering broader public policy objectives. The larger the volumes of trade exempted, and the more intense the GHG production implicated, the greater the impact. The reverse side of this coin is that a smaller scope of coverage is administratively simpler. Because it would have to focus on the national level this exemption would face problems of conflict with the GATT's MFN provisions, and would need to be accompanied by strong trans-shipment provisions (see Box 1). This exemption lacks the predictability that should be the hallmark of any scheme.
31. Given the forgoing analysis, we recommend the following exemptions be featured as part of a BCA regime:

⁵ To be clear – there could still be a trade law complaint of discrimination between *like goods*, based on the argument that high-carbon and low-carbon goods are *like* in trade law terms. But unlike country-based discrimination this type actually stands a fighting chance of passing Article XX's strictures to be found an acceptable environmental measure.

⁶ "Differential and more favourable treatment reciprocity and fuller participation of developing countries," (The Enabling Clause). Decision of the GATT Contracting Parties of November 28, 1979 (L/4903), para. 3(a).

- Exemptions for countries with a national emissions cap (with trans-shipment provisions);
- Exemptions for countries taking adequate national actions other than caps, where adequacy is defined to achieve coherence with CBDR and trade law (with trans-shipment provisions);
- Exemptions for sectors covered by a sectoral cap, or by some equivalent measures such as export taxes (with sectoral trans-shipment provisions);
- Exemptions for LDCs and LICs *if it could be assured that this would be carved out by the WTO's Enabling Clause*;
- Exemptions for sectors or goods that fall below a *de minimus* level of imports.

Identifying goods/sectors to be covered

32. A second part of determining the scope of a BCA regime is determining what products or sectors in the implementing country should be covered by the scheme. Primarily this involves determining which products or sectors are actually at risk of leakage. In part this must be done because applying BCA to sectors with low vulnerability will yield limited benefits relative to the administrative costs involved (see Box 2). In the same vein, even if only the high-emitting highly traded sectors are covered (there are relatively few of them), the regime will deliver almost all its potential benefits. Finally, as noted below, any regime is likely to be applied imperfectly, pragmatically, probably leaving room for errors and deliberate manipulation. As such, a limited application is better than a broad one, other things being equal.
33. While the ideal determination of sectoral vulnerability would be a complex process of determining reliable estimates of such things as the responsiveness of net exports and the rates of cost pass-through, in the final event any workable regime would need to use a system that is simple enough to be operational and transparent, based on reasonably available data.⁷
34. The danger in this step of the process is a determination that allows a large number of sectors to be covered. Empirical and theoretical analysis indicates that only a small number of sectors is likely to be in need of special protection. Coverage for sectors with less significant competitiveness and leakage impacts is unlikely to generate carbon benefits in excess of the administrative costs and distortions to trade. And, as argued above, such broad coverage leaves the regime more open to unfair application.

⁷ Any parallel attempts to craft sectoral approaches to dealing with leakage concerns should be mined for the valuable information and data they could provide.

35. There are two criteria for this determination, and both should be used simultaneously to avoid over-broad sectoral coverage:⁸

- The first criterion should establish that the cost of GHG regulations would result in a substantial production cost increase for the sector in question. Such cost should be calculated as the tonnes of GHG emitted by the sector, multiplied by the projected emissions tax or allowance price. These costs should then be evaluated relative to the economic size of the sector, as measured by the total value of shipments or value added. This ratio reflects the GHG-intensity of production (or of value added). Such emissions data should be available, as the enforcement of the GHG regulations will rely on it.

Some proposals instead use energy-intensity of production, but this metric is less reflective of the true cost impacts of GHG regulation, because not all energy production carries equal climate impacts, and process emissions are excluded. There are many other non-energy sources of emissions, and in some sectors (agriculture, waste management) they are more significant than energy-related emissions.

- The second criterion should establish that any attempt to pass those increased costs along to consumers would result in significant shifts in consumption to foreign sources. Note that a drop in consumption or profits is not in itself indicative of leakage, as domestic conservation and cleaner substitutes are important and desirable means to reducing emissions. However, if consumption is merely *displaced*, rather than *reduced*, leakage is occurring. The ideal indicator for this criterion would be trade sensitivity – the degree to which cost increases would lead to a substitution to alternative product sources. Unfortunately, reliable metrics for trade sensitivity are not generally available.⁹ A reasonably simple, albeit imperfect, proxy is trade exposure, measured as the value of imports and exports in the sector relative to total production plus imports.¹⁰

36. It should also be stressed that BCA should only apply to sectors or products regulated with a price-based carbon policy. These policies offer a clear carbon price with which to base the adjustments. Non-price policies should not be included for two reasons. One, while they may raise costs and influence competitiveness, it is impossible to calculate in a transparent fashion the costs associated with the policy. Nor is it reasonable to allow more inefficient carbon policies to have larger adjustments. Second, and more importantly, non-price policies do not require that regulated sectors pay for the remaining embodied carbon in their products, which is what BCAs are designed to adjust for.

⁸ These are the criteria chosen for use in the US Waxman-Markey bill as a basis for rebates, and for use in the EU's ETS as a basis for issuing free allowances. In the case of the Waxman-Markey bill they would also be the basis for coverage under the BCA regime. They are, however, not the only criteria that could be used.

⁹ These would rely on empirical estimates of elasticities of substitution between domestic and foreign products.

¹⁰ The actual formula used to calculate trade exposure is $(M+X)/(Q+M)$, where M=imports, X=exports and Q=production.

4. *Determining the level and type of adjustment*

37. Any BCA regime will need to elaborate how it calculates the adjustment it will assess on the covered products. This involves first a complex process of determining the amount of embodied carbon in a given product. It then involves calculating the level of adjustment, applying any necessary exemptions and deciding what form of adjustment will be used.

Assessing the carbon content

38. The objective is to calculate an accurate carbon footprint for imported covered products. Meeting this objective becomes more difficult if the product can be manufactured using more than one process, if the manufacturing process simultaneously manufactures multiple products or if the inputs into the process are many and are themselves produced using a complex process.

39. For relatively simple products – such as steel and cement – it may be possible to calculate the carbon footprint. For this, it is necessary to set a system boundary around the production process and to have a robust data set.

- The system boundary can be set to cover any or all of: the inputs into the production process; credit for by-products such as blast furnace slag, a clinker substitute in the cement sector; transport of final products to market; consumption of the product; and its final disposal;
- A robust data set should include data which has been measured and reported to a specified protocol and verified by a third party.

The data

40. A large proportion of large cement and steel plants world-wide collect data annually using sector-specific variants of the WBCSD/WRI GHG Protocol.¹¹ The Protocols set a system boundary within which data is measured, reported and verified. The data set is not complete as it is a voluntary initiative. Commercial confidentiality and anti-trust considerations mean that data for individual plants cannot be reported publicly.

41. Other standards exist which can be used to define a system boundary and within which data can be measured, reported and verified.¹² These have not been widely applied to date and thus building up a data set would be likely to take a number of years.

¹¹ The WBCSD/WRI GHG Protocol is detailed at: <http://www.ghgprotocol.org/>. Specific cement and steel sector initiatives have been developed over the past few years by: the Cement Sustainability Initiative (see “Getting the Numbers Right” (GNR), at: http://www.wbcscement.org/index.php?option=com_content&task=view&id=57&Itemid=118); the World Steel Association (see <http://www.worldsteel.org/climatechange/?page=2&subpage=2>).

¹² For example: ISO Standards, including 14064 and 14065; the British Standard Institute (BSI) PAS2050.

42. If production plants for imported covered products are unable or unwilling to provide measured, reported and verified data to a protocol or standard specified by the importing jurisdiction, or if the production process consists of a complex value chain including suppliers from many countries¹³, an alternative approach is to set a benchmark (see discussion below in this section). A benchmark would set one or more default GHG emissions levels for specified products.

The system boundary

43. The direct emissions from a production process should always be included within the system boundary. The decision to further hold the exporter responsible for emissions associated with inputs into the production process and downstream transport, consumption and disposal of the product depends predominantly on: how significant the inclusion of the GHG emissions would be; whether GHG emissions are already accounted for within another sector; and the practicality of collecting data which is sufficiently robust.
44. A key consideration for many products is whether GHG emissions embodied within electricity generated externally to a plant's boundaries should be included. Such 'indirect emissions' can represent the majority of emissions from processes such as the smelting of metals (e.g. aluminum, copper, titanium), and can represent a material share of total GHG emissions from sectors such as steel and cement. Not including electricity generated externally would, in these cases, incentivise leakage from the divestiture of electricity generation to exporting countries.
45. Calculating the embodied GHG emissions within electricity generated externally requires assumptions to be made and the results are somewhat uncertain. Nevertheless, we recommend that country- or region-specific GHG emission factors be applied to electricity and heat generated outside a plant's boundary. There are a number of protocols which can be used, for example the WBCSD/WRI GHG Protocol and methodologies used within the UNFCCC Clean Development Mechanism to account for GHG emission reductions from changes in electricity generation technologies and reduced electricity consumption.¹⁴ The EU Commission's benchmarks developed for Phase 3 of its Emission Trading System (EU ETS) include emissions from both electricity and heat generated externally.¹⁵ Emissions from electricity and heat generated externally should be included within the system boundary unless it can be shown that the incentives their non-inclusion creates would not be detrimental, or that robust data could not be collected to allow embodied GHG emissions to be assessed to a reasonable level of certainty.
46. Including GHG emissions from the consumption and disposal of products within the system boundary would represent a major departure from current practice. It is also unclear

¹³ Fortunately, as noted above, cost effectiveness considerations would very likely exclude manufactured products from coverage.

¹⁴ Reference these methodologies specifically?

¹⁵ Again, add a reference?

whether the responsibility to reduce GHG emissions should lie partially or fully with their manufacturers. There are significant uncertainties in defining the appropriate boundaries and results from applying life-cycle assessment techniques are considered uncertain and controversial. We do not recommend that GHG emissions from the consumption and disposal of products be included within the system boundary.

47. Where by-products are in the form of energy which is exported outside the plant's boundaries (for example electricity exports, the export of waste heat, the export of blast furnace gas), GHG emissions should be credited to the production process, using the same methodologies as for the import of the products. We do not recommend that crediting for non-energy by-products is included. There is a risk of double counting of GHG emission reductions and the downstream users do not tend to accept that they should be responsible for the GHG emissions embodied in the by-products.
48. Ideally the emissions from the transport of products to market should be included. There are however major challenges in identifying which route a specific product has taken and ascribing the GHG emissions from this transport route to the various products that have been transported. Given that GHG emissions from transport tend to be relatively low relative to the emissions from the energy-intensive production processes potentially covered by a BCA, we do not recommend that transport GHG emissions be included.

The benchmarks

49. It was argued above that if production plants for imported covered products are unable or unwilling to provide measured, reported and verified data to a protocol or standard specified by the importing jurisdiction, or if the production process is the end result of a complex value chain including suppliers from many countries, benchmarks should be used. Benchmarks should aim to capture carbon content as accurately as reasonably possible. They should be set in good faith and should not be punitive. In that spirit, whatever scope of life-cycle assessment is applied to domestic producers should also be applied to foreign producers in the setting of the benchmarks.
50. Administrative simplicity is desirable, and may even be necessary to ensure that scheme provisions do not represent an unnecessarily restrictive technical barrier to trade under the WTO's TBT Agreement. Using international standards and protocols where available would help to ensure compatibility with WTO rules and may help reduce administrative burdens.
51. Multiple benchmarks might be needed where there are multiple production processes for a single product.¹⁶ For example steel can be made from iron ore using a process starting with a blast furnace or from scrap steel using an electric arc furnace, and the two have vastly different GHG intensity profiles, implying the need for different benchmarks. As a general proposition a single benchmark for any given product is preferred; multiple benchmarks

¹⁶ The EU ETS Phase 3 benchmarks follow this methodology. They were able to set benchmarks for x processes from y sectors [complete this reference]

provide no incentives to encourage switching to the cleaner of the various available technologies. In many cases, however, they might be necessary. In steel, for example, the use of the cleaner technology is limited by scarce supplies of the input – scrap steel – and thus different technology benchmarks are needed.¹⁷ Significantly different technologies also exist in other sectors of interest: cement, and various chemicals, for example.

52. As well as technologies, there are a number of factors that can drive differences in GHG emissions intensities for individual plants: size, vintage, management, their product portfolio and the mix of fuels they use. Some of these factors follow national patterns but national average emissions are driven more strongly by the mix of plants they have in their stock. As such, distinguishing by technology probably makes more sense than distinguishing by country.
53. There are a number of options for policy makers to choose from in setting benchmarks. Four main variants are examined below, again using the criteria we enunciated at the outset.

Table 2: Benchmarks

Benchmarks	Global envl effectiveness	National policy effectiveness	Feasibility	Policy coherence	Good governance
Avg emissions intensity in exporting country	no incentives for worse-than-average performers to improve		requires data from foreign jurisdictions that might not be available or verifiable	conflicts with GATT MFN, possibly saved by GATT Art. XX	
Avg emissions intensity in importing country	low incentives for improvement; low protection against leakage		simple scheme		
Emissions intensity from best available technology	very low incentives for improvement; very low protection against leakage		simple scheme, unlikely to raise challenges		
Emissions intensity from worst practice in importing or exporting country	high protection against leakage		if based on exporting country, requires data that might not be available or verifiable	quasi-punitive, and counter to spirit of SDT, CBDR; if based on exporting country, conflicts with GATT MFN	

54. *Average emission intensity in the exporting country.* This benchmark would be somewhat effective at preventing leakage. Applying any average has the disadvantage that any producers with above-average GHG intensities are assessed at the average level, meaning there are no incentives for those poor performers to improve to the average level and little to prevent them from gaining market share via lower costs. Using exporting country data as a basis could be problematic where such data are not readily available or verifiable, and gathering such data across a variety of exporting countries would be arduous. Discriminating by country conflicts with GATT’s MFN provisions, though there is a chance that this sort of benchmark might be saved by GATT’s Article XX exceptions, since it can be

¹⁷ This case underscores the need to understand the technical and financial dynamics of the covered sectors in some detail in order to properly set benchmarks.

argued to be environmentally based and non-arbitrary, and since like all benchmarks discussed here it is an alternative used when individual producers fail to provide firm-specific data. This benchmark would need to be accompanied by provisions to prevent trans-shipment from countries assigned higher intensity benchmarks (see Box 1).

55. *Average emission intensity in the importing country.* This benchmark would be less effective at preventing leakage, assuming the importing country producers were relatively “clean”; the lower the assumed emissions intensity of the benchmark, the less actual adjustment it forces, and therefore the less effect it has on GHG-intensive producers. It is a straightforward scheme with relatively simply calculated benchmarks, and because all importers face the same benchmark it has no MFN issues.
56. *Emissions intensity from best available technology (BAT).*¹⁸ As the benchmark with the lowest assumed GHG intensity, this is also the least effective at preventing leakage or offering incentives for improvement. It is also a straightforward scheme, and perhaps the least likely to be challenged under WTO law, because of its low level impacts and its single benchmark for all countries.
57. *Emissions intensity from worst practice.* This benchmark probably represents the most effective option for preventing leakage, due to its high assumed GHG intensity. If it is based on exporting country practice, it presents the challenge of needing data from many jurisdictions, some of which might not be available or verifiable. An exporting country benchmark would also need to be accompanied by trans-shipment provisions (see Box 1), and would be in conflict with GATT MFN obligations. If it is based on importing country practice, it would presumably be slightly less effective at preventing leakage. The high level of charges implied by this benchmark could be argued to be counter to the spirit of CBDR and SDT. While it could be countered that those charges would only apply to those that did not furnish their own verified data, the process of supplying that data is a costly one as noted above, and would be particularly difficult for small and medium-sized enterprises to bear. The level of charges under this benchmark risk over-assessing covered firms, which runs counter to the objectives of the benchmark, and potentially causes trade law issues. This problem is partially ameliorated by the option to submit individual firm data.
58. In light of this analysis, we recommend that benchmarking be conducted as follows, understanding that all regime options offer trade-offs between various objectives, and none satisfies all criteria:
- In the first instance, producers should be given the option to provide verified firm-level data on emission intensity, using the same system boundaries used for domestic producers. Only when that is not forthcoming should benchmarks be used as a fallback. This attention to individual producer circumstances has the advantage that it increases

¹⁸ It should be noted that the EU ETS’s Phase 3 benchmarks, which are set at the level of the average of the 10% best EU producers, are designed only as a method for allocating free allowances, and were not designed to be applied to importers under a BCA or other scheme.

the odds that any scheme will be found WTO legal, and it provides incentives to producers to improve their processes.

- The benchmarks developed should be product-specific, and also where appropriate specific to different production processes. In principle, it is preferable to have fewer benchmarks for any given product, but where a product has significantly different technologies in use (in terms of GHG intensity, abatement options), more than one benchmark will be needed.
- For direct emissions, the benchmarks should use worst-practice emissions intensity in the importing country. This is in our opinion the best compromise between the competing imperatives of the various judging criteria we applied.
- To counter the negative impact of such a GHG-intense benchmark we recommend that implementing states offer support, in the form of financial and technical assistance in accounting, reporting and verification, to assist foreign covered exporters in submitting verified individual data.
- For indirect emissions – from off-site generated electricity and heat – the benchmarks should use average data from the exporting countries.
- Existing methodologies, standards and protocols should be used where they are available.

Exemptions to the adjustment level

59. Levels of exporter country carbon pricing should be credited. This might include export tax policies, provided they were explicitly carbon-related.

60. Any free allowances or other compensatory mechanisms to shelter domestic firms need to be taken into account when calculating the amount of adjustment due. Depending on the regime, this might conceivably mean that the level of BCA is adjusted down to zero.¹⁹

61. Special benchmarks could be developed for less developed countries (if they are not exempt), to respect the principle of CBDR. The importing country could assume, for example, that all imports from LDCs have used best available technology. This exemption would have to be accompanied by trans-shipment provisions.

Type of adjustment

62. Adjustments need not be in the form of levies. An alternative, for example, would be to allow importers or foreign producers to purchase international carbon offsets up to the determined value of adjustment.

¹⁹ It is worth noting that compensatory mechanisms could even constitute a subsidy which would *in theory* mean that the adjustment should be negative. It would, of course, be rather idealistic to recommend that this possibility should be recognized in BCA regimes, but it is worth noting nonetheless.

5. *The application of BCA to exports*

1. Border adjustment for exports would relieve exports from the regulating countries of the burden of the carbon payments associated with their production. This policy is integral to implementing true destination-based carbon pricing, if that is the goal. We noted above the analogy to the current prevalence of destination-based taxation under national VAT schemes. Adjustment for exports would avoid the equivalent of double taxation where the products were being shipped to a destination state that also applied BCA to its imports.
2. Export adjustment also helps avoid leakage from loss of market share in foreign markets, making exports from regulating countries less disadvantaged in those markets relative to products from non-regulating countries. Without this adjustment any adjustment to imports covers only a part of the leakage picture.
3. Export adjustments should be designed carefully, so as to preserve the domestic carbon pricing incentives for reducing emissions intensity. Rather than exempting exported goods, a rebate can be offered for exported products in proportion to a metric of their embodied carbon. That metric should be based on sector-wide, rather than firm-specific, calculations, so that firms do not expect larger emissions to generate larger rebates. As with import adjustments, a best-available technology metric avoids the possibility of over-adjustment, but has weaker effects on competitiveness and leakage than an average emissions metric.
4. To date, policymakers have preferred to focus on adjustment for imports only. One of the most important reasons for this is probably the unclear legal status of BCA for exports under WTO law. At the end of the day a wide range of legal scholars agree that it is not clear whether such adjustment would constitute a prohibited subsidy under the WTO's Agreement on Subsidies and Countervailing Measures.²⁰ But there does seem to be a "gentlemen's agreement" within the WTO not to rebate taxes levied on inputs that are consumed in the production process.²¹
5. Border adjustment for exports can be difficult to implement if the import adjustment policy is not applied comprehensively. For example, established rules of origin may allow policies to exempt imports of certain countries from BCA, but no such rules of destination exist: exports cannot be selectively rebated without creating incentives for diversion through transit points in exempt countries.

²⁰ Reference to legal literature?

²¹ Again, do we need a reference here?

6. *Use of revenues from import adjustments*

6. There are a number of options for the use of any revenues collected by means of adjustment applied to imports. They include:
 - Direct the collected funds to general revenues in the collecting state;
 - Refund any adjustments collected to the exporting country itself, either directly or to subsidize clean technology transfer;
 - Contribute adjustments collected to internationally administered funds for climate change adaptation;
 - Designate funds collected to be disbursed by the collecting state in ways that benefit developing countries (e.g., finance for mitigation and adaptation projects).
7. We recommend against the first option, though we recognize that any use of this revenue will have to take place within the context of domestic fiscal realities, and some jurisdictions discourage or prohibit hypothecation of tax revenues to specific purposes. Ensuring that the revenues are not retained by the levying country removes incentives to use border adjustments to enhance domestic welfare by manipulating the terms of trade.
8. The remaining three options move the regime as a whole toward better respect for the principles of CBDR and SDT. As well, while it is impossible to say *ex ante* how a BCA regime would fare if taken to WTO dispute settlement, any of these three options would likely improve its chances of success in that context, since they would help demonstrate that the BCA regime was in fact aimed at achieving environmental objectives.
9. For such measures to be meaningful, it would be important to ensure that the earmarked contributions be additional to those already required by international agreements, or pledged under existing programs of support.

7. *Other design guidance*

10. Best practice in institutions and governance for BCA can be drawn from a rich tradition of norms and principles found in trade and administrative law, industry practice and economics.

Pre-establishment guidance:

11. Trading partners should be notified of BCA proposals at an early appropriate stage (when amendments can still be introduced and comments taken into account), with draft text distributed to them on request. There should be opportunity for exporting countries and firms to present their comments in writing. These should be discussed upon request, and the written comments and the results of these discussions should be taken into account in the final regime design.
12. Entry into force of any BCA regime should give exporters and exporting country governments enough lead time to adjust their policies and practices.

Operational guidance:

13. An official point of contact should be designated to respond to questions and requests for documents from exporting countries and firms.
14. The decision-making process should be predictable and transparent, with methodologies for determining vulnerable sectors, level of adjustment and country-level applicability, for example, being public information.
15. Calculations with respect to individual countries and exporters—for example, default emissions intensity baselines—should be regularly reviewed and revised where necessary. The parameters of the regime should also be regularly reviewed – at least on an annual basis.
16. There should be mechanisms within the BCA regime whereby exporting countries and firms can appeal decisions and calculations that concern them.
17. Reporting of data necessary for the scheme (e.g., GHG emissions) should follow internationally agreed standards, such as the UNFCCC GHG emission reporting guidelines, the WBCSD/WRI GHG Protocol, or the evolving ISO guidelines.
18. There should be procedures for regular review of BCA regimes and the methodologies they employ, aimed at assessing their effectiveness in meeting their stated objectives.

Sunset guidance:

19. The measures should ideally be time limited and should have clear conditions for phase-out. BCA should only be intended to offer temporary effect during a period of transition to a

low-carbon economy and broader international cooperation. At a minimum, the continued application of BCA should be contingent on explicit criteria related to the state of progress in achieving a low-carbon economy, and in achieving international cooperation on climate change action.

Annex I: Composition of the drafting group

James Bradbury, World Resources Institute, USA

Aaron Cosbey, International Institute for Sustainable Development, Canada

Susanne Droege, German Institute for International and Security Affairs, Germany

Carolyn Fischer, Resources for the Future, USA

Dave Sawyer, International Institute for Sustainable Development, Canada

Julia Reinaud, Institute for Industrial Policy, Netherlands

John Stephenson,

Lutz Weischer, World Resources Institute, USA

Jake Werksman, World Resources Institute, USA

Peter Wooders, International Institute for Sustainable Development, Switzerland

Annex II: Suggested reading