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Border Adjustment Mechanisms

Elements for Economic, Legal, and Political Analysis

Julien Bueb, Lilian Richieri Hanania, and Alice Le Clézio

4.1 INTRODUCTION

Paris COP21 has been presented as both a diplomatic success and a victory for common sense, representing considerable progress in overcoming the deadlock the United Nations negotiation process had been in since Copenhagen COP15. Its ambition is indeed great and unprecedented. However, upon closer examination of the contents of the agreement, the COP21 epitomizes old, and perhaps even growing difficulties that negotiators meet when discussing an urgently needed global, strong, and binding compromise.

Proposed by many economists but absent from the Paris Agreement, is the definition of an international price of carbon emission, which appears in practice extremely hard to achieve and insufficient to counter biodiversity loss or achieve broad environmental goals. It is, nevertheless, very much a precondition for international sustainable production and consumption, since price is the foremost economic signal to help orient economic players. It stimulates investments and innovation in cleaner production processes and provides a new source of financing for public policies, be they environmental or developmental.

As of this writing, the most important regional greenhouse gas (GHG) pricing system is the European Union Emissions Trading Scheme (EU ETS). Spearhead of the European climate policy, this carbon market has since its inception been used as a model by other countries and regions. However, tradable emission markets are ridden with many structural flaws, which result in a final pricing of the carbon tonne that is much too low. Prices thus lose their incentive function and virtuous players—those economic agents who have already started to invest in clean technologies—are found to be at a disadvantage.

Among the many identifiable reasons accounting for international inertia in the field, it appears that the weakness of prices (i.e., taxes and carbon market prices) might be related to a reasonable fear of competitiveness loss, notably in heavy industries (Branger, Quirion, and Chevallier 2013). Indeed, one of the predominant political arguments for such low prices to internalize environmental externalities¹ is the (real or conjectured) loss of competitiveness for local businesses in a globalized economy. According to this argument, local enterprises are confronted with international competitors that would indeed be either exempt of environmental charges, or, if they exist, under less constraining regulations. Businesses respectful of environmental regulations are therefore forced to accept international competitiveness loss or offshore their production to countries with less constraining frameworks, thus annihilating efforts made in virtuous countries.

In order to avoid such perverse economic and environmental effects, several developed countries, such as France and the United States (US), have been devising adjustment systems to guarantee the efficiency of their environmental policies. These mechanisms are called 'border carbon adjustments' (BCAs). A BCA is a tariff measure that internalizes carbon emissions into the price of a given imported product. It is, therefore, a fiscal instrument, which is used in complement of carbon emissions reduction tools, such as a carbon market or a carbon tax, and targets internationally traded goods. Its primary objective is to level the playing field between domestic producers facing costly climate change measures and foreign producers facing very few.

France and Italy have repeatedly demonstrated their interest in such mechanisms at the European level: BCAs would be enforced in the most energy-intensive sectors (e.g., those that bear simultaneously the weight of environmental regulation and international competition), and would target selectively those countries that have not undertaken appropriate commitments, according to their capacity and responsibility in climate change, within the international legal framework on climate change (France 2009: article 2). Another example is the 2009 US Waxman–Markey Bill, which set both a BCA mechanism and a tradable emissions permit market.² Other developed countries, such as Japan and Australia, are studying diverse solutions, and will inevitably be influenced by their European and American counterparts. In Europe, however, strong opposition to such initiatives persists, most notably in the United Kingdom. The same obviously applies to developing countries, although some voices have been raised in favour of

¹ Externalities are external effects created by an economic agent's activity trading a free advantage, or a damage (climate degradation for instance), without monetary compensation.

² The tradable GHG emissions permits market could have been created in 2012 at the federal level in the US, but was rejected by the Senate (Schott and Fickling 2010).

BCAs (Mattoo and Subramanian 2013) amidst a growing recognition of the need for a satisfying global framework.³

In the scientific literature, BCAs are also controversial. The foremost argument against their enforcement contends that such unilateral measures are mere kludges. The universal enforcement of a carbon price would be more relevant and efficient (Markusen 1975). Houser et al. (2008), as well as Dröge et al. (2009), further argue that it could slow down international cooperation on climate change, trigger economic retaliation, and foster a return to protectionism, or stimulate emission reduction costs transfers through trade effects. However, considering the weakly binding and limited country-level mitigation provisions reached under the United Nations Framework Convention on Climate Change (UNFCCC), unilateral action is likely more useful than the status quo (OECD 2014). Moreover, their virtuous effect on competitiveness,⁴ and even in increasing global efficiency (Böhringer, Balistreri, and Rutherford 2012), is well documented in the growing economic literature (OECD 2014).

Based on the discrepancy between the urgency of climate issues and the meagre results achieved in international negotiations, this chapter weighs the usefulness of BCAs as a complement to strong regional or domestic environmental regulation. This leads us to discuss the interplay of economic competitiveness and climate change, before the economic challenges posed by BCAs in order to reach fairness in its design and implementation (Section 4.2). Section 4.3 sheds light upon the legality of BCAs according to international trade law, while Section 4.4 provides an assessment of policy-related implications. It outlines, in particular, how BCAs could be used as an engine of a necessary economic transition, for developed and developing countries equally, according to the common but differentiated responsibilities principle.

4.2 BCA IMPLEMENTATION

Environmental policy instruments fall into two categories: they are either of a regulatory (e.g., quotas, standards, certifications) or economic (e.g., taxes, tradable emission permits—TEPs)⁵ nature. In both cases, they intend to internalize environmental externalities. BCAs can be perceived as commercial

³ In 2010, India declared its intention to bring BCA measures before the World Trade Organization (WTO) Dispute Settlement Body, but has since softened its stance, based on the idea that developed countries cannot simultaneously commit to a significant reduction of their emissions and bear the weight of a large reduction of their economic activity (OECD 2014).

⁴ See, in particular, Demailly and Quirion (2008: 497–504). Other economists defend a contrary position, as Weber and Peters (2009: 432–40).

⁵ TEPs can also be referred to as ‘tradable emission quotas’ or ‘carbon markets’.

measures devised to level the playing field between domestic and foreign players whose position before environmental regulation is asymmetrical. For instance, if European producers, notably those from energy-intensive sectors, compensate rising costs linked to the implementation of the EU ETS on the final customer, they might lose domestic market shares to foreign competitors. Conversely, if they do not apply such compensation, their profits, and over time, their investments will shrink, which will reduce their ability to win. In the end, it may lead to a transfer of investments from European companies to foreign markets, as well as a joint loss of market shares on domestic and foreign markets, resulting in severe job loss and a rise of GHG emissions outside Europe—in other words, in carbon leakage, with its two main components:

- An ‘operational leakage’; that is, the operational delocalization of a domestic business, induced by environmental constraints, to less regulated foreign markets.
- An ‘investment leakage’; that is, the redirection of investment flows from environmentally regulated domestic markets to foreign countries where such regulatory framework is absent.

The implementation of a BCA requires a clear definition of its field of application, in terms of product scope, instruments, and countries, leading to the following questions.

4.2.1 Which Regulating Instrument(s)?

Most climate policies use a combination of instruments, but market signals have often been a major segment of such measures.⁶ Indeed, when dealing with environmental issues and in debates regarding the implementation of a BCA, economic instruments have largely been favoured instead of regulatory instruments. They aim to encourage, through price signals, the voluntary modification of behaviours to reduce pollution.

In general, BCAs may consist in (i) a tax on imported products based on taxes applied on similar domestic products (tax adjustment on imports); (ii) tax credits on exported products (tax adjustment on exports); (iii) mandatory acquisition of emission permits in sectors where carbon leaks have been identified; or (iv) the allocation of free permits for those sectors subject to high competition. The definition of a BCA depends as well on pre-existing instruments in the regulated zone. A border carbon tax may supplement a carbon tax on polluting activities of a given country or zone, or complement a carbon market. Tradable permits cannot be added to a carbon tax because they

⁶ For an analysis of environmental taxes and carbon markets, see Bueb (2014).

EXISTING SYSTEMS	BORDER ADJUSTMENT MECHANISM	IMPLEMENTATION	EFFECTS & LIMITS
CARBON TAX	TAX	T1 CONSUMPTION Tax on final product	T1 Final tax, similar to VAT, for goods sold on domestic territory. Its amount is proportionate to the carbon content of goods sold on domestic territory.
		T2 PRODUCTION Tax at each step of production process	T2 Paid at each step of the production process, the costs of this tax can be transferred to the consumer of the product, thus significantly encouraging 'green' processes through cumulative effects.
		T3 EXPORTS Tax credits for exporters	T3 Although carbon constraint exemptions can eliminate incentives to shift to environmental-friendly processes, it minimizes domestic disadvantages for domestic companies on international markets. These credits also encourage businesses with different production sites to export the most emission-intensive goods, while keeping the less-intensive for their domestic market.
TRADABLE EMISSION PERMIT	TAX TRADABLE EMISSION PERMIT	See T1, T2, T3	See T1, T2, T3 + added difficulty in coordinating both mechanisms
		TEP 1 TEP overall quantity is stabilized & importers included.	TEP 1 Increase in TEP demand should be followed by an increase in prices, and therefore, in marginal costs for domestic businesses. Price effects, nonetheless, depend on elasticities and market's structure. Such a measure will mostly benefit businesses holding quotas surpluses or those who have adopted environmental-friendly practices. In this scenario, where permits are auctioned, importers and domestic players bear an equal environmental burden. Free permit issuance could indeed be considered discriminating and assimilated to a subsidy.
		TEP 2 Creation of additional TEPs specifically for importers.	TEP 2 This option is less disadvantageous for domestic players as it does not penalize supply and demand. It can, however, constitute a discrimination between domestic and foreign players if TEP allocation is even partially free.
		TEP 3 'Carbon credits', are accepted to enter a market. They can be obtained through CDM/JIM.	TEP 3 Holds difficulties related to CDM/JIM, problems mostly due to carbon credit attribution and opacity of the process.
		TEP 4 Restitution of emission quotas to exporters	TEP 4 See T3.

Figure 4.1. Tradable emission permits.

Note: CDM: Clean Development Mechanism; JIM: Joint Implementation Mechanism.

Source: Authors' illustration.

require an operating carbon market—they would take the form of purchased, allocated, or restituted permits instead (see Figure 4.1).

4.2.2 How to Evaluate the Carbon Content of Imported Products?

Whatever form a BCA might take, it bears on processes and not products—it is blind to the product itself. The global political sensitivity of BCA enforcement renders precise definition of sectors and products extremely critical. It is important to evaluate correctly the carbon content of products in order to implement fair BCA measures. Carbon content is highly variable according

to countries' regulations and throughout production processes and across sectors:

- Considering country regulations, environmental constraints differ and the application of distinct BCAs according to each target country is difficult due to the amount of information needed to correctly evaluate and categorize environmental regulations.
- On the product side, two similar products from the same sector, produced by similar companies, can have starkly different emission rates. Within a single sector, similar goods can also be produced with very different methods and thus have very different carbon contents: the quantity of energy used depends on where it is produced and/or transported; the quality of energy used relates to the primary source of energy (gas or coal), even if the final energy used is the same.

These differences of carbon content would entail varied BCAs on similar products, which would be very difficult to implement.

Moreover, all importers should be subjected to emissions reduction obligations to prevent environmental dumping. Yet, prices (i.e., tax value or the purchase price of a permit bought by importers) need to be uniform (for instance, based on average values). In practice, such a uniform price may suppress individual countries' and/or individual companies' initiatives regarding emissions reduction, with virtuous players remaining comparatively unrewarded for their efforts. There would therefore be no incentive to invest in clean technology. A differentiated BCA system would reward efforts in emissions reduction, but in practice still appears unmanageable.

To lessen the problem, a first alternative could be to encourage importing companies to willingly pass an audit on the carbon content of their products. Another option would be demanding that companies give verifiable evidence of environmental regulation compliance, for instance through a certifying body. Such a disposition might, however, prove difficult to require from small importers considering the high administrative costs involved, in addition to possibly being considered discriminating, since not all companies would be subjected to this requirement.

Two other approaches, applied in conjunction or independently, are proposed in the literature: 'top-down' methods, using input-output analysis to estimate embodied energy, CO₂ emissions, pollutants, and land appropriation of international trade activities, and 'bottom-up' approaches, based on the calculation of embodied carbon through the examination of production processes of specific products. The former seems too broad and, therefore, not easy to apply. The latter, more realistic, involves two methods: the 'best available technology' (BAT) and the 'predominant method of production' (PMP). According to the PMP method, the country of import would apply a BCA by assessing the carbon embedded in an import in relation to its own

domestic production processes (Zhang 2010: 19). As for the BAT method, the country of import would apply a border adjustment by assessing the carbon embedded in an import compared to what the carbon emissions would be if the best available technology had been used (Ireland 2010).

The BAT is likely the best method. It serves as a reference to assess the carbon content of imported goods, making carbon content evaluation by an independent organism easier through the application of a single procedure used as an international standard. Furthermore, such a measure would elude the issue of cleaner foreign goods than those manufactured in the regulated zone.⁷ Offering an impartial criterion, the BAT could possibly obtain international approval and allow for the definition of international standards of production. Such approach to evaluate the carbon content of products leads, however, to a comparative assessment of production methods and processes, which might admittedly also be difficult to put into practice. Bearing in mind that BAT references do not take indirect emissions into account (for instance, emissions due to transportation) and also because of the difficulties firms have in evaluating their energy mix, the relevance of the BAT method for audits may be challenged.

4.2.3 Which Countries Would Be Affected?

Due to the existing differences in climate change regulation between developed and developing or emerging economies, BCAs would likely primarily affect the so-called BRICS and other developing countries.

Least developed countries (LDCs) could nevertheless be exempted, in order to protect their fragile development. However, exceptions of this kind are probably not the best course of action because LDCs would thus run the risk of being altogether excluded from the decision-making process. Besides, risks of trade infringement through LDCs are real in globalized and fragmented production processes, where it is difficult to track products and component parts, and this would considerably weaken such a BCA mechanism.

4.2.4 Which Flows?

In order to address climate change effectively, most sectors should in theory be subjected to environmental policies. Whether a given imported product is liable in whole or in part to a BCA will, however, naturally depend on the instrument in use (tax or TEP). Carbon markets cannot deal with all

⁷ An over-allocation of TEPs or a subsidization of these products could be complementarily considered in order to ensure positive discriminatory treatment to those products and avoid discouraging progressive investment in cleaner technologies.

emissions, in particular small firms' emissions, given the need to standardize TEP. Taxing by tonne of emitted carbon equivalent would therefore seem more appropriate, allowing for larger product coverage.

Attention should also be drawn to exports outside an environmentally regulated area. A BCA can only restore a fair level of competition within a regulated area. Protecting environmentally regulated businesses may, for instance, involve a total exemption on their exports. Such a measure, however, would most likely encourage big emitter plants to produce for export markets, while lesser emitter plants would concentrate on domestic regulated markets. An option to avoid such effect might be to base the adjustment level for exports on a uniform benchmark, such as a BAT.

BCA implementation encounters, therefore, numerous practical and economic difficulties, carbon cost evaluation being particularly challenging.⁸ However, these challenges, far from hampering BCA implementation, can steer the design of such measure towards the most efficient and fairest emission reduction mechanism, on the way to clean energy transition. Due to its effects on international competition and the international market, a BCA would, of course, also need to be compatible with countries' obligations in respect to International Trade Law.

4.3 BCAS AND INTERNATIONAL TRADE LAW

A BCA adopted by a member of the WTO should comply with the obligations undertaken by such member within the organization. The following subsections briefly present insights on the ways the General Agreement on Tariffs and Trade (GATT)⁹ allows contesting or legitimizing BCA mechanisms.¹⁰

4.3.1 Challenging a BCA under the GATT Principle of Non-Discrimination

A core obligation established among WTO members is the non-discrimination principle. This principle is notably reflected in the 'national treatment' and the

⁸ To avoid these manageable challenges, France has devised the path to determine the level of a BCA using the global GHG emissions volume per capita or per unit of gross domestic product (GDP), rather than the amount of carbon contained in a product (OECD 2014).

⁹ For clarification purposes, questions regarding climate change within the WTO go beyond the GATT framework, also reaching other WTO agreements. Moreover, a country wishing to implement a BCA in its territory will need to comply with obligations it has also undertaken under other international treaties, including bilateral and regional trade agreements.

¹⁰ As recalled by the OECD, 'measures that attempt to correct for carbon leakage, such as BCAs, are likely to be challenged by WTO members with export-oriented economies and relatively lax carbon regulation' (OECD 2014: 15).

‘most favoured nation treatment’ obligations. With respect to trade in goods, which is governed by the GATT, such obligations may be summarized as follows:

- National treatment (article III of the GATT) prohibits discriminatory treatment through internal taxes or other internal charges (article III: 2) between national products and foreign products that are considered like products or directly competitive or substitutable products. It also prevents a WTO member from applying a discriminatory treatment between like national and foreign products through laws, regulations, and requirements (article III: 4) (GATT 1947: article III);
- The Most Favoured Nation treatment (article I of the GATT) requires that a preference accorded to a product originating in or being exported to a WTO member be extended to similar products originating in or destined for the territories of all other members (GATT 1947: article I).

Besides the non-discrimination principle, and in order to ensure market opening and transparency, tariff restrictions are preferred to quantitative restrictions (e.g., quotas, import or export licences). Indeed, according to article XI of the GATT and subject to the exclusions foreseen in that provision, WTO members are not allowed to adopt quantitative restrictions to trade and quantitative restrictions must be administered in a non-discriminatory manner (article III of the GATT). BCAs might be associated to a quantitative restriction if a member decided to impose, exclusively on importers, the obligation to buy quotas on the carbon market, for example. It is, however, likely that a member would rather in such a case establish a regulatory scheme applicable to its entire market, including domestic producers, which would be examinable under article III (OECD 2014: 19).

In case a BCA adopted by a WTO member is considered by another member as altering the terms of competition existing in the international market by granting benefits exclusively to domestic producers, to the disadvantage of foreign producers, such BCA mechanism might be contested before the WTO Dispute Settlement Body (DSB) for alleged violation of the national treatment obligation under the GATT. The WTO judge will firstly need to assess whether the products at issue are ‘like products’ or ‘directly competitive or substitutable products’ according to article III of the GATT. The ‘likeness’ of products is evaluated on a case-by-case basis in WTO law, according to criteria taken from the GATT 1947 case law: ‘the product’s end-uses in a given market; consumers’ tastes and habits, which change from country to country; the product’s properties, nature and quality’ (WTO 1996a: 20). Carbon-intensity may be raised as a distinctive feature between a domestic and a foreign product if a member demonstrates, for instance, that consumers have a

preference for products with a lower carbon print, even if the products are physically identical.¹¹

It is also tenable that, as long as the BCA entails the same level of constraint on importers and domestic producers, a BCA would not be discriminatory under the GATT national treatment obligation and would comply with WTO law in this regard. For instance, the GATT allows WTO members to apply a tax adjustment at the border when it authorizes members to levy, at the importation of a product, a charge equivalent to an internal tax, which directly or indirectly affects national like products (article II: 2 (a) of the GATT). The same rationale applies to tax adjustments at exportation when these adjustments simply correspond to the exemption or refund of internal duties or taxes applied to like products destined for consumption in the country of origin or exportation. In practice, depending on the type of BCA, such equivalency of treatment between domestic and foreign products can, however, be difficult to demonstrate. A tax imposed on importers of goods while national producers of like products are subject to a carbon market (and not a tax) would probably be more difficult to justify or to prove equivalency of.

In the event a BCA adopted by a WTO member was contested by another member before the WTO judge based on the GATT national treatment obligation, the difficulties mentioned in Section 4.2 of this chapter would also undoubtedly complicate the parties' arguments and the assessment to be made by the WTO judge (e.g., WTO-UNEP 2009: 101–3). In fact, in order to evaluate the impact of a specific BCA on competitive foreign products, it would, for instance, be necessary to measure precisely the carbon content of a product and the foreign product it is compared to, as well as to justify the determination of sectors and imported products, which are targeted by that BCA. On the other hand, it is also defensible that those difficulties might become less significant with the progressive development and larger acceptance of norms and objective BAT references for the calculation of carbon prints.

Based on the most favoured nation treatment obligation, violation of the GATT might in addition be alleged with respect to differences in BCAs applied according to the (foreign) targeted country of origin or destination of a product. One of the exceptions to the most favoured nation treatment in the WTO is the special and differential treatment in favour of developing and least developed countries, enshrined in varied provisions of the WTO Agreements.¹² Its implementation is, nevertheless, dependent on certain conditions. In fact, according to the WTO special and differential treatment,

¹¹ This might be a difficult task in practice, though. See OECD (2014: 16), which recalls that 'some authors argue that market studies most often will show that consumers generally ignore the processes and production methods (PPMs) of products'.

¹² For an overview of the WTO special and differential treatment and recent discussions on this theme, see WTO (2015).

a member wishing to favour LDCs when defining its BCA mechanism would need to employ well-defined and reasonable criteria, which would furthermore need to be applied in a non-discriminatory manner to every developing country presenting the same circumstances.¹³

Finally, the choice of countries targeted by a BCA could also possibly be challenged under the principle of 'shared but differentiated responsibilities', recognized nowadays as a component of sustainable development (United Nations 1992: Principle 7). In fact, this principle has been consecrated in the UNFCCC and it is defensible that it has been integrated as well into WTO law through the concept of sustainable development, which is acknowledged as an objective of the organization (WTO 1994: Preamble, emphasis added). Such principle requires that different countries' capacities, social and economic situation, and historical contribution to climate change be taken into account. It would therefore not be unlikely for a WTO judge assessing the design and implementation of a BCA to consider those elements in their legal reasoning and admit that the BCA may apply dissimilar treatment to different foreign countries according to their specific circumstances and their historical contribution to climate change.¹⁴

4.3.2 Resorting to the GATT General Exceptions Regarding Health and Environment Protection

In the advent of a contested BCA brought before a WTO judge and considered discriminatory by the latter, and therefore in violation of the GATT, the member having adopted the BCA would likely attempt to justify it on the grounds of the general exceptions under article XX of the GATT. These general exceptions are part of the general balance of rights negotiated by WTO members (*EC—Hormones* (DS26 and DS48) and *US—Shrimp* (DS58)) (WTO 1998a, 1998b) and aim, among others, to allow members to adopt measures for health and environmental protection that might otherwise be considered contrary to GATT obligations. Article XX (b) and (g) of the GATT establish exceptions for measures '(b) necessary to protect human, animal or plant life or health' and '(g) relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption'.

Article XX (b) requires the fulfilment of a necessity criterion, implying a proportionality control of a measure with respect to the objective that a

¹³ See WTO (2004: §§ 160–7). For a brief chronological overview of the special and differential treatment at the WTO, see Richieri Hanania (2009: 137–40).

¹⁴ According to Morosini (2010: 717–25), border adjustment measures in the Waxman–Markey Bill were inconsistent with WTO law, *inter alia*, because they did not respect the principle of shared but differentiated responsibilities.

member is pursuing, as well as the availability of alternative reasonable measures that might be less restrictive to trade but as effective. Such interpretation has been applied in the well-known cases *Korea—Beef* (DS161 and DS169), *EC—Asbestos* (DS135), *US—Gambling* (DS285), and *Brazil—Retreaded Tyres* (DS332), where the WTO judge explained that a measure may be considered necessary based on the importance of the interest or value it protects, its contribution to the materializing of the objective pursued (effectiveness of the measure), and its degree of restriction to trade (WTO 2000: §§ 160). Once these conditions are all met, article XX (b) may be considered applicable. When defending the non-applicability of article XX (b) to a BCA, a WTO member would thus need to demonstrate that other alternative, as effective and less trade restrictive options existed.

Regarding article XX (g), the expression ‘relating to’ has been interpreted as meaning ‘primarily aimed at’ (*US—Gasoline* (DS2)) (WTO 1996b: 15–19), which is larger than the notion of ‘necessary’. If a BCA is demonstrated to be primarily aimed at environmental objectives (and not only competitiveness issues), article XX (g) might be considered applicable. Moreover, in the case *US—Shrimp* (DS58), the WTO Appellate Body considered that the notion of ‘exhaustible natural resources’ should be read according to contemporary concerns regarding the protection of the environment, as defined in recent international treaties (WTO 1998b: § 129). Such decision allows for an evolutionary interpretation of general exceptions in the GATT and demonstrates the WTO judge’s wish to take into account environmental objectives as they are progressively established in International Law under the concept of sustainable development. Environmental interests reflected in a BCA might therefore be positively considered by the WTO DSB based on contemporary environment-related concerns and recent climate change discussions.

However, the exceptions listed in article XX are to be interpreted together with its introductory statement, the *chapeau* of article XX: a measure must not be applied ‘in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade’ (GATT 1947: article XX). In fact, should the challenged WTO member succeed in demonstrating that its BCA mechanism conforms to one of the exceptions of article XX, the *chapeau* of that same article would still require the WTO judge to verify how the contested measure has been applied. In a few words, the WTO judge would need to examine, cumulatively, if:

- The defendant has attempted to cooperate with other members in a non-discriminatory manner in order to diminish the trade restrictive effects that the contested measure may have.
- The measure is sufficiently flexible to account for different conditions existing among countries, even if it is not required from a WTO member to expressly anticipate individual conditions of each member.

- The conception, the base principles, and the structure of the measure do not testify to protectionist purposes. The environmental objectives of a BCA will need to be particularly highlighted in order for a member to respond to this condition.

While the GATT principles exposed in this section may guide the design of a BCA, its consistency with WTO rules may only be considered on a case-by-case basis. In case of a dispute on the matter, the WTO judge will necessarily examine the economic features and obstacles identified in the preceding sections of this chapter for each type of BCA, in order to assess their conformity to International Trade Law. Since their effects on international competition and their complexity may be significant, it is likely that, while certain BCAs might be considered as responding to the conditions required under one of the paragraphs of article XX, their acceptability according to the *chapeau* of that same article might be problematic. Any attempt to elaborate a BCA that respects WTO Law should therefore take into account the three cumulative criteria listed here (pp. 71–2).

Based on the economic and legal aspects put forward in Sections 4.2 and 4.3, the following section discusses the acceptability of BCAs from a political sciences standpoint.

4.4 THE POLITICAL IMPLEMENTATION OF BCAS IN THE CONTEXT OF ENERGY TRANSITION

The objectives stated in the COP21 agreement—that is, capping at 1.5°C–2°C the global temperature increase, as well as the reference to carbon neutrality—seem vague since no specific emissions reduction targets have been agreed upon by the Parties to respond to the urgency in limiting global warming. The only measure which can be viewed as relatively constraining are the ‘Intended Nationally Determined Contributions’ (INDCs).

Consequently, the implementation of BCAs remains an effective tool for countries ready to implement, or having already committed to, a bold energy transition. BCAs can level the environmental commitment (INDC) among countries facing similar responsibilities in climate change. Moreover, a well-designed BCA should aim at answering the concerns of developed countries while promoting growth in developing countries, and should be complemented by sobriety policies.¹⁵

¹⁵ Referring to the principle of primary energy consumption reduction by using less of an energy service, also called energy sparing, ‘sustainable lifestyles and sustainable patterns of consumption and production’ (COP21 Paris Agreement, Preamble), behavioural change, energy saving, energy soberness, energy sobriety, and so on. The authors have chosen to use ‘sobriety’ in

4.4.1 Energy Transition, BCAs, and Developing Economies

As BCAs are gaining more interest from both governments and academia, the growing body of scientific literature has mainly focused on carbon leakage and competitiveness issues. However, another obstacle to BCAs implementation involves their potential consequences on developing economies. Indeed, BCAs have also been interpreted as a commercial sanction towards developing countries, making international negotiations related to this measure more complicated. This question has become a recurring argument against BCAs, but requires a more careful examination of the stakes for developing countries. In an insightful analysis of climate change and trade policy, Mattoo and Subramanian (2013) evaluate the different forms of BCAs and their consequences from both a trade and an environmental perspective. The authors suggest the 'least undesirable' form of a BCA: '[a] border tax adjustment based on the carbon content in domestic production would broadly address the competitiveness concerns of producers in high-income countries while inflicting less damage on developing-country trade' (Mattoo and Subramanian 2013: 113). To ensure developing countries do not remain vulnerable to trade policy, the international climate change debate, rather than WTO negotiations alone, should also cover international agreements on such trade impact.

At the global level, matters are much more intricate when considering the energy transition and economic development nexus. Reframing the problem, and therefore looking for viable solutions without hampering development opportunities, have become both necessary and urgent. Mattoo and Subramanian propose to challenge what they dub the 'narrative' problem, that is the historical perspective on the industrialized countries' responsibilities in climate change and the past 'colonization of emissions space' (Mattoo and Subramanian 2013: 1).

A decisive climate change issue for developing countries relates to technology generation and transfer. Technology generation, diffusion, and management policies are a key component of climate change mitigation and adaptation at the global scale (IPCC 2014). Technological change, accelerated through international cooperation, could enable developing countries to meet emission reduction goals. This could be achieved by shifting from the sole financing of emission cuts to an investment in technology generation (Mattoo and Subramanian 2013: 18). However, reaching consensus on international technological cooperation might prove to be as difficult as achieving an agreement in international climate negotiations. Considering the urgency of climate change matters, the unilateral implementation of BCAs could represent, beyond a

the present study, the translation of the French term 'sobriété', because it best describes our current energy overconsumption and its 'hangover' results. Sobriety differs from efficiency (or efficient energy use), which refers to using less energy for a constant service.

palliative solution, a necessity. In fact, this type of measure could serve as an instrument to discourage environmental dumping and promote international involvement and significant mitigation commitments (beyond INDCs) in the framework of the Paris Agreement. Furthermore, resulting in an increase in prices in developed countries, BCAs limit consumption in the North and leave resources available for the South. As inequalities (of access to goods and of income) exacerbate environmental damage, in turn further increasing inequalities (UNDP 2011), BCAs could play an important role in promoting equity and development. A BCA would, therefore, be one step among others towards energy transition and serious efforts in addressing climate change.

4.4.2 BCAs, an Available Tool to Reshape the World

Climate change issues, and environmental concerns at large, also present a social dimension, which includes inequality and development issues related to burden sharing, ultimately translated into the principle of common but differentiated responsibilities towards a carbon-free world.

In order to address that objective, green growth is often advocated, not as a means but as an end, in different forms (sustainable and inclusive growth or green economy). It entails the ‘greening’ of economic activities according to a particular logic that starts with renewable energy and ends with energy efficiency facilitated by technology. Yet this reasoning overlooks four essential elements. First, economic activity is parameterized by our ability to produce energy: the more energy per capita, the higher the growth potential in developed countries (Giraud and Kahraman 2014). Second, the ability to substitute the primary carbon energy consumed for renewable energy depends on the availability of materials needed for windmills or photovoltaic panels, as well as on the pace of deployment of these systems (Roman 2014). Actually, the historical energy return on investments rates are decreasing, all energies considered, and more energy is needed to produce energy and to extract raw materials, since the most accessible deposits have been or are becoming depleted. Furthermore, if renewable energy systems are deployed too fast, the newly created energy will be used for the production of other units of carbon-free energy production, rather than substituting current polluting energies (Pearce 2009). Third, the focus on renewable energy and energy efficiency conceals the issues of energy embedded in products¹⁶ and ‘grey energy’.¹⁷ Fourth, technological solutions may prove hazardous. The benefits in energy efficiency achieved through technological progress are real, but remain

¹⁶ Embedded energy is the energy needed to produce a given good.

¹⁷ Grey energy is the sum of embedded energy and all other forms of energy used throughout the lifecycle of a given good until its recycling.

insufficient, particularly given the environmental urgency. In addition, the rebound effect, process by which greater energy efficiency may lead to an increased energy use ('buy a more fuel-efficient car, drive more' rationale) is another issue for technological developments. Finally, since innovation cycles continue to be variable and unpredictable, waiting for a major innovation that could completely change energy use seems too precarious.

For these reasons, sobriety policies are as necessary as renewable energies and energy efficiency in order to achieve energy transition. Often disregarded because it entails a strong political will, this policy concept challenges certain aspects of economic growth. Sobriety policies aim indeed at classifying products according to utility and regulating their production and use. For instance, organic farming based on agroecological principles should be promoted, given the fact that such type of production of agricultural goods involves lower inputs and fewer cleanup operations. This is where sobriety collides with growth: any activity involving an over-consumption of energy or even environment cleanup operations contributes positively to the gross domestic product (GDP).

The implementation of sobriety policies, followed by energy efficiency policies, and the deployment of renewable energies,¹⁸ reverses the traditional reasoning applied to climate policy and underlines the need for a strong, compelling regulation. Dealing with the complexity of the economical–environmental–social nexus, itself embedded in a fluctuating international context, national regulators must resort to various instruments to foster definite changes in behaviour. BCAs are an essential component of this array of instruments. They contribute to the development of more local, thus 'sober' activities.

In addition, limiting transportation has become a necessity, as the COP21 French ambassador underlined (Tubiana 1991). Sea transportation is still not subjected to emissions reduction and a recent emissions stabilization agreement for air transportation agreed to at the International Civil Aviation Organization contains no mention of objectives of 1.5°C–2°C, despite the need for greater regulation of those sectors. Transport reduction policies, perhaps supplemented by trade reduction policies, would encourage local production, circular economy,¹⁹ economy of functionality,²⁰ and thus development, at any development

¹⁸ Sobriety policies and energy efficiency would reduce primary energy consumption by 66 per cent. As a result, the need for renewable energies would be considerably reduced, paving the way to smoother raw materials sharing at the international level (Association Négawatts 2011).

¹⁹ The main goal of circular economy is to enable the production of goods and services while preventing excessive consumption and squandering of raw materials, and as to facilitate recycling.

²⁰ A functional economy is one that optimizes the use (or function) of goods and services and thus the management of existing wealth (goods, knowledge, and nature). The economic objective

stage. Again, BCAs may be seen as regulatory instruments available for the national regulator to foster behaviour change.

Moreover, the implementation of BCAs transcends the stakes of competitiveness and level playing field issues. Seeking to reach an equitable distribution of commitment, and considering the principle of common but differentiated responsibilities, it appears necessary to shift from national production-based emissions counts to a consumption-based approach. Considering the amount of GHG consumed rather than produced opens a fair route, between countries as well as within social categories, and encourages sobriety behaviours. Additionally, BCAs become incentive schemes for countries to adapt production to local needs and rethink their environmental policy. BCAs would thus become an essential component of social and environmental justice,²¹ helping to depart from a business and macroeconomic logic.

In sum, BCA enforcement would be, in all likelihood, necessary, together with paradigm shifts, breeding strong incentives to ease developing countries' acceptance of this instrument. Also, funds collected via BCAs should be reallocated to objectives such as the production of more sustainable goods, innovation, technology, or skills transfer. The Green Climate Fund (GCF) could equally be made the recipient of all or parts of these funds.

4.5 CONCLUSION

The commitments agreed upon by the Parties during the COP21 should lay the foundations for any energy transition strategy but also for economic transition policies. However difficult to meet, these commitments entail a profound, and voluntary, transformation of our societies. The BCA mechanism can enable our (over)consumption societies to move towards a sober, low-carbon society, which uses energy and resources thoughtfully. BCAs turn out to be more than a simple restraint towards a given trade partner. It is, actually, a powerful means to share resources.

In fact, obstacles to climate negotiations are elsewhere. Developed countries must assume their historical responsibilities in climate change through an effective constraining commitment to limit emissions at the national level, which entails important internal transformations to achieve energy transition

of the functional economy is to create the highest possible use value for the longest possible time while consuming as few material resources and energy as possible.

²¹ Poverty and environmental destruction are highly correlated (Laurent 2011; Keucheyan 2014).

effectively. They should respond to demands from developing and some emerging economies for financing, technology transfer, and sobriety policies. Such requirements could be accommodated through the implementation of a global carbon price. BCAs would be useful in balancing environmental efforts with growing equity. Difficulties in implementation, which appear to be more of an economic nature than legal or political, can be overcome. The French proposal to apply BCAs according to the global GHG emissions volume per capita or per unit of GDP, rather than the amount of carbon contained in a product, seems to be not only feasible, but also fair since calculation would be favourable to developing countries. The emission ratio by MWh created by the International Energy Agency, which tracks average GHG emissions per country for each megawatt produced, could also be employed.

BCA implementation requires, nevertheless, a strong and durable political commitment to environmental protection and its design calls for a careful assessment of the numerous constraints exposed in this chapter.

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