Aligning the Trade and Climate Regimes: Challenges and Way Forward for Border Carbon Adjustment Mechanisms

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Introduction

Products traded internationally account for a large share of global greenhouse gas (GHG) emissions — and thus, the trading system has been widely regarded as a problem with respect to the global response to climate change. In this White Paper, we take up the issue of the alignment of the WTO's vision, rules, and procedures with the world community's commitment to climate change action. We focus, in particular, on the issue of policy-induced GHG leakage,[2] i.e. the displacement of GHG emissions from countries that increase the stringency of domestic GHG policies to low-standard countries. Increasing the stringency of domestic GHG policies often imposes additional costs on domestic producers, thereby reducing their competitiveness and incentivizing shifts in the production and investments (and related GHG emissions) to low-standard countries. As a result, GHG emission reductions achieved by the more stringent GHG policy are offset by increased emissions in a low-standard jurisdiction. Concerns for GHG leakage can hamper climate action in high-ambition jurisdictions, threatening the achievement of commitments to deep decarbonization set in the Paris Agreement and the Glasgow Climate Pact.

[1] The authors are grateful to the participants in the Climate and Trade workshop of the *Remaking the Global Trading System for a Sustainable Future Project*, which took place in Talloires from 20-23 September 2022, for useful comments on an earlier draft of this White Paper.

[2] Grubb, M., Jordan, N. D., Hertwich, E., Neuhoff, K., Das, K., Bandyopadhyay, K. R., van Asselt, H., Sato, M., Wang, R., Pizer, W. A., & Oh, H. (2022). Carbon Leakage, Consumption, and Trade. *Annual Review of Environment and Resources*, 47(1), 753–795. https://doi.org/10.1146/annurev-environ-120820-053625.

International trade contributes to GHG leakage by allowing the shift of production — and related investments — of GHG-intensive goods from high- to low-standard jurisdictions. To the extent that WTO rules and practices prevent high-ambition jurisdictions from addressing carbon leakage, there is a fundamental tension between the climate and trade regimes, which puts the latter under pressure.

In this White Paper, we argue that a first step to reconciling the climate and trade regimes is to ensure that the prices of internationally traded products reflect the *climate-related harm* of producing and consuming these goods and we analyze possible ways to achieve this. In particular, we analyze the possibility of adopting BCA mechanisms on imports to price GHG emissions from international trade. In essence, BCA mechanisms apply a charge on the GHG emissions embedded in — i.e., released in the production and (sometimes) the consumption of — imported products. This charge aims to level the playing field between domestic producers and their competitors in low-standard jurisdictions, thereby reducing GHG leakage risks.

Academic and grey literature has discussed various instruments that can address GHG leakage.[3] This White Paper focuses on BCA mechanisms due to their prominence in the policy debate. Various jurisdictions are currently considering implementing BCA mechanisms. The European Commission's proposal for a Carbon Border Adjustment Mechanism (CBAM) is a prominent example.[4] Other jurisdictions have also announced their intention to follow a similar path, including Canada, the United Kingdom, and the United States.[5] Furthermore, BCA mechanisms are sometimes seen as instruments to support the creation of an international

[3] Böhringer, C., Fischer, C., Rosendahl, K. E., & Rutherford, T. F. (2022). Potential impacts and challenges of border carbon adjustments. *Nature Climate Change*, 12(1), Article 1. https://doi.org/10.1038/s41558-021-01250-z.
[4] Böhringer, C., Fischer, C., Rosendahl, K. E., &; Rutherford, T. F. (2022), supra note 2.
[5] Jakob, M., Afionis, S., Åhman, M., Antoci, A., Arens, M., Ascensão, F., van Asselt, H., Baumert, N., Borghesi, S., Brunel, C., Caron, J., Cosbey, A., Droege, S., Evans, A., Iannucci, G., Jiborn, M., Kander, A., Kulionis, V., Levinson, A., … Willner, S. (2022). How trade policy can support the climate agenda. *Science*, 376(6600), 1401–1403. https://doi.org/10.1126/science.abo4207

sub-global agreement on climate change mitigation (a so-called climate club). The discussion on implementing a climate club is now high on the G7 agenda.[6]

After delineating the need for BCA mechanisms to internalize climate externalities and — thereby — address carbon leakage, we discuss a potential design for such mechanisms. We then analyze potential legal and political barriers to implementation and discuss possible ways to resolve these conflicts. Lastly, we broaden the discussion to potential reforms of the vision, rules, and procedure of the WTO to better align it with the sustainability agenda.

Addressing GHG Leakage Concerns through Border Carbon Adjustment Mechanisms

This section discusses GHG leakage and the contribution of international trade to the problem. It then looks at how BCA mechanisms can help address GHG leakage related to international trade. Lastly, this section discusses the rationale for focusing on pricing GHG emissions embedded in internationally traded goods at the social cost of carbon — i.e., the economic cost of emitting an additional ton of GHGs — as a first step to addressing GHG leakage and reconciling the trade and climate regimes.

GHG Leakage and International Trade

The stringency of current GHG policies diverges significantly across countries, reflecting differences in policy priorities and resources available to address the climate problem. These variations can result in GHG leakage. In particular, an increase in the stringency of climate change mitigation policies in a jurisdiction can raise costs for domestic producers, reducing their competitiveness in the domestic and foreign markets. This reduction in competitiveness can shift production and investments (and the related GHG emissions) to low-standard jurisdictions.

[6] G7 (2022). *G7 Statement on Climate Club*. G7

International trade enables these shifts, for instance, by allowing consumers and producers in high-standard countries to consume goods produced in low-standard ones.

GHG leakage can hamper climate action in high-ambition jurisdictions because climate harms are global — albeit not evenly distributed — and do not depend on where GHG emissions occur. Thus, countries that want to increase the stringency of domestic GHG policies risk losing competitiveness while not reaping the climate benefits of their policies. This is daunting for climate action given the bottom-up approach embraced in the Paris Agreement, which calls for climate ambition at the domestic level, as well as in light of the more general obligation for developed countries to take the lead in mitigating climate change, in line with the Common but Differentiated Responsibilities and Respective Capabilities Principle.

Ex-post econometric analyses from emission-intensive and trade-exposed industries under the EU emission allowances trading scheme do not provide strong evidence of carbon leakage.[7] However, the low price of emission allowances under this scheme in the periods considered in these studies can explain these results. Ex-ante numerical simulations confirm the theoretical intuition that an increase in the stringency of GHG emission policies will result in carbon leakage. In particular, these studies indicate that carbon leakage would be 5-30 percent, depending on assumptions on, for instance, carbon price level and the elasticity of the supply of fossil fuels.[8] Thus, countries that plan to increase their ambition on climate mitigation action have legitimate concerns that their efforts will be significantly offset by GHG emissions increases abroad.

In light of this, the next sub-section will discuss how BCA mechanisms can help address GHG leakage.

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[7] Verde, S. F. (2020). The impact of the EU emissions trading system on competitiveness and carbon leakage: the econometric evidence. *Journal of Economic Surveys*, *34*(2), 320-343.
Verde, S. F. (2020). The Impact of the Eu Emissions Trading System on Competitiveness and Carbon Leakage: The Econometric Evidence. *Journal of Economic Surveys*, 34(2), 320–343. https://doi.org/10.1111/joes.12356

[8] These are reviewed in Böhringer, C., Fischer, C., Rosendahl, K. E., &; Rutherford, T. F. (2022), supra note 2.

Border Carbon Adjustments Mechanisms and GHG Leakage

By charging a price on GHGs embedded in imported products, BCA mechanisms can *level the playing field* between domestic and foreign producers selling in the importing country. Furthermore, when carbon adjustment mechanisms also apply to exports by the implementing country (e.g., exported goods are exempted from domestic GHG policies), domestic producers can more easily compete in foreign markets. Both options can help address competitiveness concerns and related GHG leakage issues, although this paper only focuses on imports, as further explained in the next section.

Furthermore, BCA mechanisms incentivize the uptake of more ambitious climate policies in trading partner countries — thereby reducing GHG leakage — in two ways. On the one hand, the exporting country's government has an incentive to reduce the *compliance cost* in export sectors by implementing new climate policies. These could include, for instance, energy efficiency policies that help close the energy efficiency gap and subsidies for deploying environmental technologies.[9] On the other hand, BCA mechanisms can be structured so that the price applied to each tonne of GHGs embedded in imported products equals the *difference* between the stringency of domestic and foreign climate policies. Under a BCA mechanism structured in this way, the exporting country can implement revenue-raising climate policies (such as carbon taxes) to reduce the carbon price applied by the foreign jurisdiction on its export and *collect revenues* that would otherwise accrue to the importing jurisdiction.[10]

Existing research suggests that BCA mechanisms can address carbon leakage and competitiveness concerns effectively.[11] A meta-analysis of more than 30 studies finds that BCA mechanisms can reduce leakage by more than one-third on average (from 14 percent to 8 percent).[12]

[9] Dominioni, G., & Esty, D. C. (2023). Designing Effective Border-Carbon Adjustment Mechanisms: Aligning the Global Trade and Climate Change Regimes. *Arizona Law Review*, Forthcoming, (65) 1.
[10] Dominioni, G., & Esty, D. C. (2022), supra note 8.
[11] Böhringer, C., Fischer, C., Rosendahl, K. E., & Rutherford, T. F. (2022), supra note 2.
[12] Branger, F., & Quirion, P. (2014). Would border carbon adjustments prevent carbon leakage and heavy industry competitiveness losses? Insights from a meta-analysis of recent economic studies. *Ecological Economics*, 99, 29–39. https://doi.org/10.1016/j.ecolecon.2013.12.010

However, the effectiveness of these mechanisms may depend on the specific design of the measure. Thus, jurisdictions interested in implementing a BCA mechanism should think carefully about its design. With this in mind, the next section discusses best practices for designing a BCA mechanism.

First though, the next sub-section discusses the rationale for using BCA mechanisms to internalize the climate externality from GHG emissions embedded in international traded goods as a first step to address GHG leakage and reconcile the trade and climate regimes. In particular, we argue that these instruments can also address trade distortions and can therefore be well aligned with the aims of the WTO.

Border Carbon Adjustment Mechanisms, Climate Externalities, and Trade Distortions

A key aim (and responsibility) of the WTO is to increase the welfare of people globally and ensure an optimal allocation of scarce resources. Uninternalized climate externalities reduce prices of goods whose production or consumption releases GHG emissions. Besides causing carbon leakage, this underpricing distorts trade by hampering that production is located in countries based on their comparative advantage — a key condition for maximizing social welfare. Estimates by the International Monetary Fund indicate that climate externalities are almost one-third of the global unpriced externalities from fossil fuels in 2020.[13] These externalities are large, amounting to about 6.8 percent of global GDP, or 5.9 trillion US Dollars.[14]

By pricing GHG emissions embedded in goods produced in low-standard jurisdictions, BCA mechanisms can help internalize climate externalities, thereby ensuring that international trade supports welfare creation. Thus, to the extent that BCA mechanisms allow pricing GHG emissions

[13] Parry, I., Black, S., & Vernon, N. (2021). *Still not getting energy prices right: A global and country update of fossil fuel subsidies* (IMF Working Paper WP/20/236). IMF.
[14] Parry, I., Black, S., & Vernon, N. (2021), supra note 12.

embedded in internationally traded products at the social cost of carbon, these instruments align with widely accepted aims of the WTO.[15]

Of course, leakage and competitiveness concerns may also exist in a world where all environmental externalities are already internalized. Imagine, for instance, that a country decides to implement a domestic carbon price per tonne of GHG emitted domestically that is much higher than the global social cost of carbon. This country may still face competitiveness and carbon leakage problems that are worth addressing, even if all countries in the world already price GHG emissions at the social cost of carbon. Should the WTO be held accountable for these leakage effects? While in principle the answer might be yes, a first and easier step to take is to ensure that the WTO fulfils its widely acknowledged aims.

On this ground — and in alignment with recent scholarship on trade and climate change[16] — we think that a *first step* to reconciling the trade and climate regimes would be to implement BCA mechanisms that price GHG emissions embedded in internationally traded products at the social cost of carbon starting from the more carbon-intensive and trade-exposed industries. Focusing on pricing externalities from international trade can facilitate the acceptance of these instruments and it is thus well suited as a starting point for bridging the existing gaps between the *climate* and the *trade communities* and, pragmatically, as a logical springboard for efforts to re-think "The Global Trading System for a Sustainable Future".

Designing Border Carbon Adjustment Mechanisms

[15] We recognize that estimates of the social cost of carbon vary significantly across studies. However, this has not prevented countries from acting on this. For instance, the Biden administration applies a social cost of carbon of 51 U.S. dollars per metric ton of carbon, see Interagency Working Group on Social Cost of Greenhouse Gases, United States Government Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990. Similarly, this should not halt the implementation of a BCA mechanism. Ideally, cooperation among trading partners can help reaching an agreement on how to estimate the social cost of carbon.
[16] Esty, D.C. (2022). Trade Implications of Greenhouse Gas Emissions Pricing. *World Trade Report* 2022.

Designing a BCA mechanism requires finding the right balance between ensuring its political viability, administrative feasibility, environmental effectiveness, and compatibility with the international trade and climate regimes. Below, we delineate what the design of a BCA mechanism that accounts for all these factors can look like.

In designing a BCA mechanism, a key choice to be made is whether to apply the adjustment exclusively to imports — in the form of a *charge* that targets the carbon embedded in imported goods — or to extend it also to exports — in the form of a *rebate* proportional to the amount of carbon embedded in exported goods or an exemption applied to exported goods from the application of the domestic GHG constraint. Research indicates that the GHG reduction benefits of export BCA mechanisms are uncertain.[17] At the same time, export rebates risk not being compatible with the Agreement on Subsidies and Countervailing Measures.[18] For these reasons, we focus below on the design of a BCA mechanism on imported products.

A second key design choice regards sectoral coverage. In this respect, narrowing coverage to trade-exposed and carbon-intensive products in the upstream part of the value chain can help reduce administrative complexities.[19] Under such an approach, products covered would include, for instance, steel and cement clinker, but not products that include cement or steel as an input.[20] This narrow approach still allows covering a significant share of GHG embedded in internationally traded goods and focusing on sectors where the risk of carbon leakage is higher.[21]

A third key design choice regards the GHG emissions covered. Here, data availability constraints on indirect emissions not associated with energy use (e.g., GHG emissions embedded in inputs other than energy and waste disposal) suggest restricting the GHG emissions coverage to

[17] Cosbey, A., Droege, S., Fischer, C., & Munnings, C. (2019). Developing guidance for implementing border carbon adjustments: lessons, cautions, and research needs from the literature. *Review of Environmental Economics and Policy*, 13(1), 3–22. https://doi.org/10.1093/reep/rey020 .
[18] Mehling, M. A., Van Asselt, H., Das, K., Droege, S., & Verkuijl, C. (2019). Designing border carbon adjustments for enhanced climate action. *American Journal of International Law*, *113*(3), 433-481. https://doi.org/10.1017/ajil.2019.22.
[19] Droege, S., & Panezi, M. (2022). How to design border carbon adjustments. In *Handbook on Trade Policy and Climate Change*. Edward Elgar Publishing, 163-179. https://doi.org/10.4337/9781839103247.
[20] Droege, S., & Panezi, M. (2022), supra note 18.
[21] Cosbey, A., Droege, S., Fischer, C., & Munnings, C. (2019), supra note 16.

direct emissions (scope 1) and — if done correctly[22] — indirect emissions related to energy use (scope 2 emissions).[23]

Once the scope of emissions covered is set, *benchmark emissions* need to be determined. There are different types of possible benchmarks, such as best technology available, worst technology available, or average GHG emissions in the domestic sector. The choice between these benchmarks needs to account for the fact that foreign producers subject to the BCA mechanisms will have incentives to decarbonize only if doing so reduces the cost of the BCA mechanism on their products. For this reason, the BCA mechanism should be tailored at the firm level, not the sector level.[24] At the same time, looking at product-specific GHG emissions creates risks of resource shuffling, meaning that foreign producers export their cleaner products to countries with the BCA mechanism in place without actually reducing their emissions.[25] A design option that can address these issues is to apply the charge on imported products based on default values (sectorial benchmarks) but allow exporters to prove —through a credible third-party verifier — that their emissions at the firm level and per *type* of product are lower than assumed.[26]

A last key feature of the BCA mechanisms that needs to be decided is what policies to adjust for and whether to credit policies implemented in the exporting country other than a carbon tax. Establishing the equivalence of GHG policies across countries is likely to be one of the main point of contention between trading partners in the implementation of BCA mechanisms. Some analysts suggest adjusting and crediting exclusively explicit carbon prices (prices applied via carbon taxes and emission allowance trading schemes). This offers administrative advantages compared with adjusting and crediting a broader set of policies because data on GHG policies implemented abroad is often missing or incomplete, and there are methodological issues related to establishing the GHG

[22] The inclusion of indirect emissions poses several challenges. For further discussion, see Marcu, A., Mehling, M., Cosbey, A., Maratou, A. (2022). *Border Carbon Adjustment in the EU: Indirect Emissions in the CBAM*. ERCST.
[23] Cosbey, A., Droege, S., Fischer, C., & Munnings, C. (2019), supra note 16.
[24] Cosbey, A., Droege, S., Fischer, C., & Munnings, C. (2019), supra note 16.
[25] Cosbey, A., Droege, S., Fischer, C., & Munnings, C. (2019), supra note 16.
[26] Cosbey, A., Droege, S., Fischer, C., & Munnings, C. (2019), supra note 16.

price equivalent of some non-price policies.[27] At the same time, adjusting for a broader set of policies than explicit carbon prices has various advantages. For instance, it leaves more flexibility to the exporting country to act on climate change and see these efforts credited in the BCA mechanism.[28] This can increase climate action in the exporting country and better align the adjustment mechanism with the bottom-up approach of the Paris Agreement.[29]

To balance the need to account for administrative complexities while reaping these benefits, a way forward would be to start adjusting and crediting a limited set of policies, to the extent possible given existing administrative constraints. This set of policies can be gradually expanded as administrative issues are overcome.[30] Crediting for *effective carbon prices* imposed via carbon taxes, emission allowance trading schemes, and other taxes that increase the marginal cost of consuming fossil fuels (fossil fuel taxes),[31] could be a good starting point, due to the relative ease of converting the implicit carbon prices applied via fossil fuel taxes into explicit carbon prices — compared with other GHG policies — such as non-tradable performance-based standards.[32] Ideally, the domestic policies for which the adjustment takes place would impose a price on GHG emissions released in domestic production that is equal to the social cost of carbon. This would ensure that the GHG emissions embedded in imported products will also be priced at this level.

The Legal and Political Viability of Border Carbon Adjustment Mechanisms: A Deeper Dive

In the previous section, we have described a potential design for BCA mechanisms that accounts for administrative and (some) legal constraints while delivering adequate climate outcomes. Below, we

[27] Dominioni, G., & Esty, D. C. (2022), supra note 8.
[28] Dominioni, G., & Esty, D. C. (2022), supra note 8.
[29] Dominioni, G., & Esty, D. C. (2022), supra note 8.
[30] Dominioni, G., & Esty, D. C. (2022), supra note 8.
[31] Dominioni, G. (2022) Pricing carbon effectively: a pathway for higher climate change ambition. *Climate Policy*, 1-9. https://doi.org/10.1080/14693062.2022.2042177.
[32] Dominioni, G., & Esty, D. C. (2022), supra note 8.

discuss more in-depth potential WTO law and political challenges to the implementation of such mechanisms and ways to address these.

WTO Law Compatibility

A crucial challenge for the implementation of a BCA mechanism is to ensure compatibility with WTO law to strengthen its legitimacy and avoid legal disputes. In this regard, particular relevance the rules concerning most-favored-nation treatment and national treatment, under Articles I and III of the General Agreement on Tariffs and Trade (GATT) have. These provisions respectively require that trade policies do not discriminate between different trade partners (most-favored-nation) and between domestic and foreign producers (national treatment). Below, we discuss three key potential issues on the compatibility of BCA mechanisms with these provisions. In particular, we focus on (i) whether products with different levels of embedded GHGs can be considered "like products"; (ii) what GHG pricing instruments can be subject to adjustment under the GATT; and (iii) whether crediting climate policies implemented in the exporting country is compatible with the most-favored-nation principle.

The *like-products* question concerns whether adjustments for charges related to processes and production methods (PPMs) that do not leave physical traces in the product itself is compatible with Article III:2 GATT. This Article requires that imported products are not treated less favorably than domestic "like products". The issue of "likeness" with respect to PPMs and import taxes represents a long-standing and still ongoing discussion among trade lawyers. The landmark 1970 Report of the Working Party on Border Tax Adjustments clarified the legal treatment of these measures but did not take a position on the PPMs issue.[33] Nor was the issue fully clarified in WTO jurisprudence. A relevant precedent can be seen in the *Superfund* case, in which the importing country (United States) imposed an environmental tax on certain imported products due to the use

[33] GATT (1970). Border Tax Adjustments: Report of the Working Party, L/3464, BISD 18S/97 (2 December 1970)

of chemical feedstock in the production process, and the measure was deemed legitimate by a GATT panel.[34] However, this case concerned inputs that were physically incorporated, albeit in a different form, in the final product. Thus, at the moment, WTO jurisprudence does not explicitly recognize the possibility to adjust for charges on non-product-related PPMs, such as charges that target GHG emissions released in the production of imported goods.

The second key issue concerns what type of *GHG pricing instruments* can be taken into account within BCA mechanisms. In particular, it is debated whether border tax adjustments are feasible only for fiscal instruments, or also for regulatory instruments. Regulatory instruments include, for instance, emission allowance trading schemes, which — despite putting an explicit price on carbon — are generally not seen as fiscal instruments, or other non-price GHG policies, such as non-tradable performance-based standards.[35] Scholarly research is divided on this matter.[36]

Lastly, a third critical point is whether *crediting* climate policies implemented in the exporting country is compatible with the most-favored-nation principle. Above we argue that a BCA mechanism should credit for a broad set of GHG policies, accounting for the administrative difficulties of doing so. However, from a trade-law perspective, crediting for climate policies implemented abroad may give rise to legal challenges under Article I GATT. In particular, trade partners with weak GHG policies could be concerned with the more stringent border adjustment applied to their exports compared with products exported from high-standard jurisdictions. At the same time, also not crediting for policies abroad may lead to legal challenges. In this case, the challenge could come from countries that do have stringent GHG policies in place, as their products

[34] GATT (1987). Panel Report, United States—Taxes on Petroleum and Certain Imported Substances, BISD 34S/136 (June 17, 1987).
[35] Pizer, W.A. & Campbell, E.J. (2021). *Border Carbon Adjustments without Full (or Any) Carbon Pricing* (Working Paper 21-21). Resources for the Future.
[36] Some authors argue that border carbon adjustment can be problematic to justify for regulatory instruments such as emissions trading schemes. In this sense, see Böhringer, C., Fischer, C, Rosendahl, K. E., & Rutherford, T. F. (2022), supra note 2. For a diverging view, see Englisch, J. & Falcao, T. (2021). EU Carbon Border Adjustments and WTO Law, Part One. *Environmental Law Reporter*, 51(10), 10857-10882.

would be subject to both these policies *and* the border adjustment charge — and thus risk losing competitiveness compared with exports from low-standard jurisdictions.[37]

The practical relevance of the three mentioned issues is mitigated by the applicability of Article XX GATT.[38] Article XX GATT provides for general exceptions, which allow justifying measures that are otherwise incompatible with GATT obligations, as long as such measures qualify under one of the subheadings and meet the requirements of the "chapeau" of Article XX.

While Article XX does not specifically mention climate change as a possible justification for national measures, it is widely recognized that two exceptions — at least — can be relevant for such purposes: i) Article XX(b) for measures necessary to protect human, animal, or plant life or health, and ii) Article XX(g) for measures relating to the conservation of exhaustible natural resources.[39]

To satisfy the requirements of the Chapeau of Article XX, the BCA mechanism should not be applied in such a way as to give rise to arbitrary or unjustifiable discriminations, or disguised restrictions on international trade. In other words, the WTO Member invoking the exception will have to demonstrate that no less-restrictive alternative was reasonably available and that the measure genuinely pursues climate-change objectives, and does not represent a form of disguised protectionism.[40]

Case law has clarified various features that matter in establishing whether a BCA mechanism meets the criteria of the Chapeau of Article XX. Various features of the BCA mechanism discussed above help meet these criteria. The first factor relates to the climate change effects of the instrument.[41] Implementing the adjustment mechanism to sectors most exposed to carbon leakage and selecting carefully the emission benchmarks —as suggested above— can

[37] Mehling, M. A., van Asselt, H., Das, K., Droege, S., & Verkuijl, C. (2019), supra note 17.
[38] Mehling, M. A., van Asselt, H., Das, K., Droege, S., & Verkuijl, C. (2019), supra note 17.
[39] Trachtman, J.P. (2017). WTO Trade and Environment Jurisprudence: Avoiding Environmental Catastrophe. *Harvard International Law Journal*, (58), 273-310.
[40] See Appellate Body (2001). *European Communities—Measures Affecting Asbestos and Asbestos-Containing Products* (WT/DS135/AB/R), para. 172, requiring the Member invoking Article XX GATT to demonstrate the absence of an "alternative measure that would achieve the same end and that is less restrictive of trade".
[41] GATT (1982). Panel Report, *United States—Prohibition of Imports of Tuna and Tuna Products from Canada*, (BISD 29S/91), para. 4.8.

improve the climate outcomes of the measure, and therefore also its compatibility with Article XX. Similarly, the Chapeau of Article XX will require to take into account the climate policies implemented in the exporting country as well as leave flexibility to the exporting country on how to avoid the imposition of the border change on its exports.[42] Crediting a broad set of policies implemented in the exporting country can help meet these requirements.[43]

Compliance with the Chapeau of Article XX GATT also requires that the WTO Members who intend to implement BCA mechanisms first engage in serious and good-faith negotiations with affected countries to reach an agreed solution.[44] Arguably, the wide-ranging consensus in negotiations that led to the adoption of international climate agreements — such as the Paris Agreement or the Glasgow Climate Pact — might qualify as such. Yet, neither of these instruments explicitly refer to BCA, therefore it is recommendable that specific negotiations are held with the affected countries before the implementation of such a measure.[45] We further discuss these needs for negotiations below. Lastly, the mechanism needs to be implemented in a transparent manner. Below we discuss possible collaborations between the implementing jurisdiction and various international institutions that can help increase the level of transparency of the mechanism.

Overall, the analysis presented above indicates that a well-designed BCA mechanism would likely comply with WTO law. However, the lack of specific WTO jurisprudence on border carbon adjustments might lead to a certain reluctance by governments in adopting such instruments. Therefore, in the following section, we discuss a few options through which WTO Members could better clarify the scope for the implementation of border carbon adjustments under existing WTO law. Before doing so, we discuss more in detail potential political obstacles to the implementation of BCA mechanisms and ways to address them.

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[42] Appellate Body (2001). *United States.—Import Prohibition of Certain Shrimp and Shrimp Products, Recourse to Article 21.5 of the DSU by Malaysia* (WT/DS58/AB/RW), para. 149.
[43] Dominioni, G., & Esty, D. C. (2022), supra note 8.
[44] Appellate Body (1998). *United States— Import Prohibition of Certain Shrimp and Shrimp Products* (WT/DS58/AB/R), para. 166
[45] Mehling, M. A., van Asselt, H., Das, K., Droege, S., & Verkuijl, C. (2019), supra note 17.

Other (Non-Legal) Considerations

Besides legal risks, the implementation of BCA mechanisms may disrupt existing cooperation on climate change and increase the risk of trade frictions. For instance, BASIC countries have pushed back on the implementation of BCA mechanisms, declaring these measures "discriminatory and against the principles of Equity and CBDR-RC"[46]. Along these lines, stakeholder and expert interviews indicate that the implementation of the EU BCA mechanisms can threaten current collaborations on climate change between the EU and other major emitters.[47] These risks are particularly material given the already tense relationship between EU countries, the US, and the UK —on the one hand — and Russia and China — on the other hand — on dossiers relating to the Russian invasion of Ukraine and the territorial claims of China over Taiwan.[48]

The key concern expressed by developing countries concerning current plans to implement BCA mechanisms by developed countries is the impact on their economies. Research indicates that implementing a BCA mechanism will reduce exports from trading partners, negatively impacting their GDP and employment.[49] Some analysts have raised concerns regarding the compatibility of this burden shift with the UNFCCC principle of Common But Differentiated Responsibilities and Respective Capabilities.[50] In addition, some countries have expressed concerns that the BCA mechanism coerces exporting countries to implement certain measures, in contrast with the

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[46] BASIC Ministerial Meeting (2021). *Joint Statement issued after the 30th BASIC Ministerial Meeting on Climate Change*. India, available at: https://www.gov.za/nr/speeches/joint-statement-issued-conclusion-30th-basic-ministerial-meeting-climate-change-hosted.

[47] Hübner, C. (2021). *Perception of the Planned EU Carbon Border Adjustment Mechanism in Asia Pacific—An Expert Survey*. Konrad-Adenauer-Stiftung, available at: https://www.kas.de/documents/265079/265128/EU+Carbon+Border+Adjustment+Mechanism.pdf/fed1d5a4-4424-c450-a1b9-b7dbd3616179?version=1.1&t=1615356593906.

[48] For instance, China has been reported as suspending bilateral talks on climate change with the US government in the aftermath of the Taiwan visit by US House speaker, Nancy Pelosi, see https://www.climatechangenews.com/2022/08/08/us-china-climate-working-group-cancelled-after-pelosis-taiwan-visit/

[49] Böhringer, C., Fischer, C., Rosendahl, K. E., & Rutherford, T. F. (2022), supra note 2; Magacho, G., Espagne, É., & Godin, A. (2022). Impacts of CBAM on EU trade partners: consequences for developing countries. *AFD Research Papers*, (238), 1-20.

[50] Jakob, M. et al. (2022), supra note 4.

bottom-up approach of the Paris Agreement.[51] Addressing these concerns will require that countries implementing a BCA mechanism act strategically, both at the *design* and at the *diplomatic* level.

From a *design* perspective, the BCA mechanism outlined in the previous section has at least two features that can reduce the risks of trade retaliation and of disrupting climate change cooperation. First, the narrow application to sectors most exposed to carbon leakage would reduce the negative impacts on third countries.[52] Second, by crediting *effective carbon prices*, the proposed BCA mechanism offers greater flexibility to exporting countries on how to reduce the burden of the charge on their exporting sectors, thus reducing the mechanism's alleged "coercive" effect.[53]

The negative impacts of BCA mechanisms on exporting countries could be addressed in various ways, including: i) implementing exemptions or lower charges for developing countries —especially SIDS and LDCs; ii) scheduling longer timelines for developing countries to meet decarbonization targets; iii) distributing carbon revenues collected through the BCA mechanism to trade partners to act on climate change or development more broadly; iv) a mix of two or three of these options. Current debates on the distribution of carbon revenues from international shipping could be a useful starting point to discuss the distribution of revenues from BCA mechanisms.[54]

Carbon revenue use could be combined with capacity building and knowledge exchange activities sponsored by the implementing jurisdiction, to help trading partners with capacity deficiencies to reduce the impact of the BCA mechanism on their exporting sectors. For instance, the training could focus on building capacity to close the energy efficiency gap in exporting sectors of negatively impacted countries.

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[51] Gläser, A. and Oldag, C. (2021). *Less confrontation, more cooperation: increasing the acceptability of the EU Carbon Border Adjustment in key trading partner countries* (Policy Brief). Germanwatch. (interviews with Chinese and Russian officials); Hübner, C. (2021), supra note

[52] Shen, H., Yang, Q., Luo, L., & Huang, N. (2022). Market reactions to a cross-border carbon policy: Evidence from listed Chinese companies. *The British Accounting Review*, 101116. https://doi.org/10.1016/j.bar.2022.101116.

[53] Potentially, as adequate methods are developed and data are collected, BCA mechanisms could also look beyond effective carbon prices and include other GHG policies. However, at the moment this route seem impracticable from an administrative perspective, see Dominioni, G., & Esty, D. C. (2022), supra note 8.

[54] Dominioni, G. and Englert, D. (2022). *Carbon Revenues from International Shipping: Enabling an Effective and Equitable Energy Transition* (Technical Paper). World Bank.

Implementing a BCA mechanism will also require a *diplomatic* effort by the implementing country. Besides increasing the chances of meeting the requirements of Article XX GATT (see above), these diplomatic efforts can help reduce opposition from trading partners. For instance, diplomatic engagements can foster transparency of the BCA mechanism and contribute to designing it in such a way that takes into account and (potentially) addresses the concerns of trading partners regarding the impacts of the BCA mechanism on their exports. This can help tailor the implementation of the BCA mechanism to the circumstances of trading partners, for instance, regarding how to establish equivalence between GHG policies implemented in various jurisdictions.

Besides bilateral diplomatic efforts, the implementation of BCA mechanisms designed as illustrated above can greatly benefit from support from various international organizations. We focus on these cooperation needs in the next section.

Cooperation Needs to Implement a Border Carbon Adjustment Mechanism

Various international organizations can cooperate with the WTO in supporting the implementation of BCA mechanisms. For instance, the International Organization for Standardization (ISO) could help set up a certification standard for GHG emissions embedded in producing the goods under the BCA mechanism.[55] Exporters could use these certificates to reduce the charge applied to their products when the GHG embedded in their export is lower than the benchmark the importing country applies. There are long-standing collaborations between ISO and the WTO, and ISO classifications are often employed by the WTO, for instance, to determine whether products are like.[56] These collaborations can be a solid starting point for future collaborations.

The Organization for Economic Cooperation and Development (OECD), IMF, IPCC, and World Bank could be engaged to produce approaches to estimate effective carbon prices in the

[55] Droege, S., & Panezi, M. (2022), supra note 18.
[56] Droege, S., & Panezi, M. (2022), supra note 18.

importing and exporting countries, and more broadly to establish the equivalence between national GHG policies. Some of these organizations have developed method and collected data that could help to set default values for crediting effective carbon prices.[57] These method can serve as a foundation to produce estimates of effective carbon prices on which adjustments can be established.[58]

Other organizations could help increase the transparency and acceptability of BCA mechanisms among trading partners. Organizations such as the United Nations Conference on Trade and Development (UNCTAD) — which already performs impact assessments for the decarbonization of international trade concerning the shipping sector[59] — is well-positioned to provide a third-party assessment of the economic impacts of BCA mechanisms.

The participation of national trade ministries and environmental ministries to discussions on the implementation of BCA mechanisms discussions is essential to facilitate governments' buy-in. To this end, one could also envision the creation of a joint expert working group between trade ministries and environmental ministries that operates under the auspices of the WTO and UNFCCC.

A Way Towards a Climate Club?

As discussed above, the implementation of BCA mechanisms may have the adverse effect of increasing tensions between trade partners. However, implementing a BCA mechanism is sometimes seen as a vehicle to increase international cooperation on climate change because, as mentioned above, it can incentivize the uptake of more stringent climate policies in trade partner countries. Studies that account for strategic choices of individual countries confirm that — under some conditions — BCA mechanisms can help increase cooperation on carbon pricing.[60]

[57] Dominioni, G., & Esty, D. C. (2022), supra note 8.
[58] Dominioni, G., & Esty, D. C. (2022), supra note 8.
[59] See, for instance, UNCTAD (2021). *UNCTAD Assessment of the Impact of the IMO Short-Term GHG Reduction Measure on States*. UNCTAD.
[60] See, for instance Irfanoglu, Z.B., Sesmero, J.P., and Golub, A. (2015). Potential of border tax adjustments to deter free riding in international climate agreements. *Environmental Research Letters* 10 (2).

Creating a climate club is now high on the G7 agenda, with the 2022 German presidency pushing for establishing such a club.[61] In light of this, it becomes even more important to implement a BCA mechanism that reduces trade tensions between G7 countries.

In this respect, it is important to implement BCA mechanisms that allow G7 countries that do not have an explicit carbon price in place at the national level — such as the United States — to participate in the climate club combined with a BCA mechanism.[62] Recognizing the adjustment for effective carbon prices in the BCA mechanism —instead of explicit carbon prices alone — can better enable the United States' participation in the climate club.[63] Such *an effective carbon pricing club* could also bring additional benefits in terms of increased domestic capacity to address climate change and include finance ministries more closely in climate change policy.[64]

Rethinking WTO Vision, Rules, and Procedures to Align the Trade and Climate Regimes

We have argued here that well-designed BCA mechanisms are unlikely to violate WTO rules. Nevertheless, the existence of some grey areas may represent a barrier to their implementation, especially by risk-averse governments. To overcome such challenges, in this section we suggest how to rethink the WTO's vision, rules, and procedures to facilitate the adoption of BCA mechanisms, and, ultimately, ensure a better alignment of the trade and climate regimes.

Rethinking the WTO vision

Supporting the establishment of BCA mechanisms to internalize climate externalities represents a key opportunity for the WTO to reassert its central role in governing international trade relationships. In the current political landscape, dominated by mounting skepticism towards

[61] G7 (2022). *G7 Statement on Climate Club*. G7.
[62] Dominioni, G., & Esty, D. C. (2022), supra note 8.
[63] Dominioni, G., & Esty, D. C. (2022), supra note 8.
[64] Dominioni, G. (2022), supra note 30.

multilateral institutions, the overall legitimacy of the WTO has been undermined from several fronts.[65] These include the United States' blocking of Appellate Body appointments and, more recently, speculations around the possible withdrawal of Russia. In this context, the need to undertake urgent climate action can serve as a catalyst for cooperation among WTO Members.

We think that setting the internalization of climate externalities at the center of the vision for the 21st century should be a priority for the WTO. Focusing on climate externalities is an opportunity for the WTO to show leadership in international trade relations, as efforts to link climate and trade considerations are already taking place in a wide range of bilateral trade agreements. In this sense, the latest free trade agreements (FTAs) concluded by the European Union, such as the EU-UK FTA which includes several provisions on trade and climate change, represent a prominent example.

The WTO has begun to intensify its work on the link between trade and environmental sustainability, including trade and climate change. Negotiations on relevant issues are taking place both within well-established fora, such as the Committee on Trade and Environment (CTE),[66] and in newly established ones, such as the Trade and Environmental Sustainability Structured Discussions (TESSD). In both cases, the issue of border carbon adjustment is at the forefront of the debate. Within the TESSD, in particular, parties have voiced their concerns regarding the need to ensure compatibility of carbon border adjustment mechanisms with the WTO legal framework.[67] These fora may provide a suitable environment to start re-thinking the WTO vision and align it more with the international climate change regime.

In the following, we suggest a way to rethink WTO rules and procedures in order to facilitate the adoption of BCA mechanisms.

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[65] Low, P. (2022). The WTO in Crisis: Closing the Gap between Conversation and Action or Shutting Down the Conversation? *World Trade Review*, 21(3), 274-290. doi:10.1017/S1474745622000064.
[66] Committee on Trade and Environment (2022). *Report of the meeting held on 2 February 2022* (WT/CTE/M/74), and
[67]Trade and Environmental Sustainability Structured Discussions (2021). *Communication by Japan, 23 March 2021,* (INF/TE/SSD/W/10).

Rethinking WTO rules and procedures

Examining potential legal issues that may arise from the implementation of BCA mechanisms, we have highlighted that no major legal amendments are required to ensure the WTO compatibility of BCA mechanisms, provided that these are adequately designed.

However, a practical issue remains: the imposition of carbon-based levies at the border might nevertheless raise legal claims before the WTO, especially in light of the lack of WTO jurisprudence on the matter. Hence, it is recommended that WTO Members take proactive steps to minimize such risk. Given the urgency to reduce GHG emissions, it is important to minimize areas of uncertainty that could slow down ambitious climate action.

To this end, a first possibility is given by the adoption of an *authoritative interpretation*, which generally serves to clarify the legal boundaries to implement a WTO law-compatible BCA mechanism. The possibility to approve an authoritative interpretation is provided under Article IX:2 of the WTO Agreement, and this instrument could be well-suited to specify the boundaries of application of Article XX GATT exceptions to BCA mechanisms. However, the adoption of an authoritative interpretation appears practically challenging at the current juncture. According to the provision of Article IX:2 of the WTO Agreement, it requires at least a three-quarter majority of WTO Members, although there is a general preference for consensus.[68]

Alternatively, a further option that has gained some popularity among legal scholars is for WTO Members to agree on the adoption of a waiver,[69] as regulated under Article IX:3 of the WTO Agreement, whereby in exceptional circumstances an obligation imposed under WTO law is waived. Such a waiver could clarify the circumstances under which a BCA mechanism is exempted

[68] Van Damme, I. (2010). Treaty Interpretation by the WTO Appellate Body. *European Journal of International Law*, 21(3), 605–648. https://doi.org/10.1093/ejil/chq049.
[69] Bacchus, J. (2017). *The case for a WTO Climate Waiver* (Special Report). Centre for International Governance Innovation.

from the most-favored-nation and national treatment obligations. This would improve legal certainty and facilitate the adoption of more ambitious climate policies. Moreover, when compared to authoritative interpretations, a waiver appears politically more viable. Although its adoption also requires at least a three-quarter majority, its reach is not as broad as authoritative interpretations, as its validity can be circumscribed to specific Members and for a limited time. In fact, it is an instrument more frequently adopted in WTO practice, as waivers are adopted on a yearly basis.[70] However, the prospects of adoption of a waiver are likely to remain slim unless consensus is reached on key issues on the design of BCA mechanisms, including standardized methods to establish the equivalence of GHG policies and GHG embedded in goods, and the operationalization of differentiation between developed and developing countries. Cooperation efforts among trade ministries and within CTE and TESSD are therefore essential to make a climate waiver possible.

From a longer-term perspective, the WTO could further strengthen its alignment with the climate change regime by amending its internal procedures. In particular, WTO member states could implement *ex ante* review mechanism under which sub-global instruments aimed to tackle climate change are scrutinized before being implemented.[71] If the instruments are deemed in alignment with international commitments to mitigate climate change supported by almost every country in the world, such as those included in the Paris Agreement, the instrument would be barred from further scrutiny under WTO law. The assessment could be carried out by a new specialized body, perhaps established in cooperation with other international institutions (e.g. the UNFCCC Secretariat), that carries out the assessment following a lighter procedure than that required for climate waivers, to fasten the review process.[72] The governance arrangements and procedural rules for such an ex-ante review will need to be thought through carefully to ensure that the interest of

[70] See, for instance, the list of waivers adopted in 2019, WT/GC/W/795, https://docs.wto.org/dol2fe/Pages/FE_Search/FE_S_S009-DP.aspx?language=E&CatalogueIdList=259951&CurrentCatalogueIdIndex=0&FullTextHash=371857150&HasEnglishRecord=True&HasFrenchRecord=True&HasSpanishRecord=True.
[71] Dominioni, G., & Esty, D. C. (2022), supra note 8.
[72] Dominioni, G., & Esty, D. C. (2022), supra note 8.

relevant stakeholders are adequately represented and the assessment balances climate and trade considerations adequately.[73]

Conclusions

In this White Paper, we have argued that implementing a well-designed BCA mechanism on imported products is a viable way to start reconciling the climate and trade regimes, as it can help to ensure that the price of internationally traded products reflects the social cost of carbon. In particular, we have discussed how such a BCA mechanism could look like to adequately address carbon leakage, taking into account legal, political, and administrative constraints. The analysis has also revealed that WTO law is unlikely to pose major obstacles to the adoption of a well-designed BCA mechanism. Yet, grey areas remain which may prevent risk-averse governments to implement these instruments. In light of this, we have argued that there is a role for the WTO to clarify the conditions under which BCA mechanisms can be compatible with WTO law and we have examined possible ways forward. We think that acting on this could reaffirm the leadership of the WTO in international trade for the 21st century.

[73] Dominioni, G., & Esty, D. C. (2022), supra note 8.