

# Don't Believe the Hype: A BCA Is Doable

*(and We're Doing  
Most of It Already)*

**The existing trade apparatus and currently available data are  
the building blocks of a successful border carbon adjustment**

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# INTRODUCTION

To achieve deep decarbonization of the global economy, we must align climate and trade. A persistent concern about climate policies is that they will push investment and emissions to overseas jurisdictions with laxer environmental regimes, harming the domestic economy while doing nothing to help the climate. To protect domestic competitiveness, many governments have sought to insulate carbon-intensive industries from climate policies so that businesses aren't undercut by high-emitting, low-cost imports. These practices have slowed climate mitigation efforts, so much so that even ambitious jurisdictions like the European Union are struggling to deliver on their decarbonization pledges.<sup>1</sup>

The next wave of policies to address competitiveness will take an inverse approach: hold overseas emitters accountable for their contributions to climate change. Border carbon adjustments (BCAs) will charge imports for the carbon emissions released during their manufacture and refund exports for carbon costs paid. Not only do BCAs level the playing field so that all goods bear the same carbon costs, but they will immediately give more carbon-efficient U.S. businesses a leg up.

Indeed, properly designed climate policy can increase domestic production and profitability in key economic sectors, while lowering global greenhouse gas emissions, research from the Climate Leadership Council found.<sup>2</sup> Most of the United States' major trading partners have significantly larger carbon footprints; for example, it takes more than three times the carbon emissions to make the same dollar of value in China as it does here at home.<sup>3</sup> Leveraging this advantage through a BCA is vital to delivering the domestic emissions reductions necessary to respond to climate change while growing the economy.

Border adjustments will be the next phase of global climate cooperation. International organizations, like the World Bank and International Monetary Fund, are calling for harmonized carbon pricing to align climate ambition across economies.<sup>4</sup> The European Union has released a roadmap for including border adjustments as part of its midcentury climate strategy.<sup>5</sup> The Biden administration, the U.K., Canada, and Japan have all signaled interest in policies that can reconcile climate and trade objectives and curtail bad actors overseas.<sup>6</sup> Together, these nations make up more than half the global economy; they have the market power to establish a new era of climate diplomacy based on aligning trade rules with a stable climate future. To gain access to these markets, firms will have to start paying for their emissions. They will face a choice: reduce carbon emissions or risk losing share in the world's richest consumer markets.

Opponents to BCAs have suggested that they're too difficult to design, unsupported by data, and likely to spark trade wars or strain export-based economies. But BCAs are vital to a climate stable future – and the obstacles to implementation are both overstated and surmountable.

Properly designed climate policy can increase domestic production and profitability in key economic sectors, while lowering global greenhouse gas emissions.



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## Part One:

# THE OPTIMAL DOMESTIC POLICY PAIRING

A border carbon adjustment will be easiest to implement if it is integrated into a domestic carbon fee, like that proposed under the Baker-Shultz Carbon Dividends Plan. Only with a domestic carbon fee can we create a border adjustment charge that is predictable; capable of amplifying our domestic decarbonization efforts; easy to implement simultaneously to protect the competitiveness of U.S. firms; and consistent with our obligations under international trade agreements.

## Predictable Border Charges

A carbon fee provides a clear pathway to implementing a border carbon adjustment. Pricing the emissions associated with imports would be a straightforward extension of an internal policy – and will mirror its ambition. Just like the domestic carbon fee, the border adjustment rate for each ton of emissions is set in statute and predictable into the future. All goods sold in the U.S. – regardless of where they are manufactured – carry the same carbon price per ton of emissions; all U.S.-made goods sold abroad are refunded for any

carbon prices paid. There will be no confusion over the border carbon adjustment rate, and price signals will allow consumers to select between goods based on their relative carbon intensity, regardless of where they're made. Every company who sells in the U.S. will compete on a level playing field.

## Expedient Implementation

It is vital that border adjustments are part of any ambitious domestic climate policy from the start. Businesses that are trade exposed, operate with tight profit margins, or are subject to long-term contracting need the assurance that their competitors are facing the same compliance costs on the same timetable. A carbon fee can be applied to imports the same day it is introduced on domestic emitters. This guarantees that carbon-efficient U.S. firms will see a competitive advantage from climate policy on day one. The very expedience of the BCA is what will enable the U.S. to enact a more ambitious climate policy.

## **A domestic carbon fee is the ideal companion policy for a border carbon adjustment. It ensures border charges:**

- are predictable and consistent with domestic policy
- are implemented quickly to give domestic industries a level playing field from day one
- and accord with international trade obligations

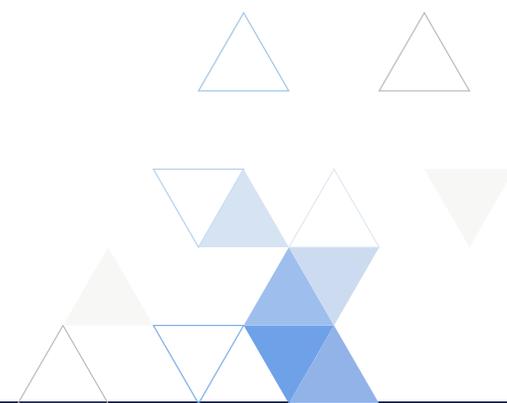


## Alignment with Trade Agreements

There's clear alignment between a BCA framed around a domestic carbon fee and our international trade agreements. The World Trade Organization allows for the border adjustment of product-based taxes in line with the destination principle of taxation. This allows products to be treated the same way in the domestic market regardless of where they are manufactured. Imported products can be charged the same taxes or fees as domestic products and exported products can be refunded taxes or fees paid. Consider the value-added tax, or VAT, a type of consumption tax applied in 160 countries that is fully refundable on exports and applied to all imports and has longstanding support at the WTO. A VAT is charged to producers along a supply chain so that the tax charged to inputs is passed through in product prices. The carbon price mimics a VAT in that the carbon price is passed forward along the supply the chain. Just like with a VAT, a BCA is needed to ensure that all products are charged the same rate for related emissions, regardless of where they happen.<sup>7</sup>

## Alternative Policy Scenarios

A BCA may be designed to address the costs of domestic climate policies other than an economy-wide carbon fee, though these alternate designs have shortcomings. For example, without a carbon price in place, there are challenges to calculating the appropriate value for a border adjustment.<sup>8</sup> Sector-based approaches have also been explored, although such an approach may limit some or much of the emissions mitigation and competitive benefits driven by an economy-wide approach. While these proposed approaches are important for deepening the conversations around BCAs and advancing some of its overall objectives, it is clear that a BCA backed by a domestic carbon price is the most preferable approach.



## Part Two:

# WE HAVE THE DATA WE NEED TO GET STARTED

The BCA will create a level playing field for domestic firms and importers by charging all producers the same rate for their carbon emissions. To charge importers for their overseas carbon emissions and refund exporters for domestic carbon fees paid, a BCA requires high quality emissions data. Thanks to a significant push for data transparency and growing interest across governments and the private sector, much of this information is already available. Where data is not available or difficult to obtain, proxies are already used to estimate emissions.

All countries are required to report national level emissions under the Paris Agreement and at least 40 countries operate mandatory reporting requirements for facility-level greenhouse gas emissions. For example, the U.S. requires all large emitters – covering about 90 percent of domestic emissions – to report

emissions annually under the EPA’s Greenhouse Gas Reporting Program.<sup>9</sup> Voluntary reporting programs are even more expansive: in 2016, the Greenhouse Gas Protocol from the World Resources Institute and the World Business Council for Sustainable Development provided the carbon accounting platform for 92% of Fortune 500 companies.<sup>10</sup>

In the last decade, the number of companies reporting their emissions has grown more than three-fold and now covers more than half of global market capitalization.<sup>11</sup> Companies in countries without mandatory reporting, like India and Brazil, use these voluntary accounting standards to collect and standardize emissions data as well.<sup>12</sup> Even country-level data reported to the United Nations Framework Convention on Climate Change (UNFCCC) provides a valuable data source to approximate emissions in particularly carbon-intensive sectors.<sup>13</sup>

### AVAILABLE DATA ON CARBON EMISSIONS:

<b>NATIONAL</b>	Parties to the United Nations Framework Convention on Climate Change are required to report their nation’s greenhouse gas emissions. Under the Paris Agreement, nations have agreed to the Enhanced Transparency Framework, which will improve emissions measurement, reporting, and verification over time. <sup>14</sup>
<b>INDUSTRY</b>	The International Energy Agency tracks country-level energy and industrial emissions by sector and annually reports global industrial emissions data. <sup>15</sup>
<b>COMPANY</b>	Over 9,600 companies, making up about 50% of global market capitalization, disclose their CO2 emissions through CDP, a nonprofit that holds the world’s largest dataset on voluntary reporting. Voluntary emissions data reporting is rapidly increasing.
<b>FACILITY</b>	More than 40 countries around the world require facilities to report their CO2 emissions. Many countries without reporting requirements are working with groups like the World Bank to develop voluntary accounting practices and explore reporting programs. <sup>16</sup>
<b>PRODUCT</b>	Experts from the policy institute Resources for the Future show how product-level emissions could be interpreted with relative technical and administrative ease for energy-intensive products. For more complex products, initiatives like CoClear’s Carbon Catalogue are using voluntarily reported data to show product-level emissions for many goods. <sup>17</sup>
<b>ELECTRICITY</b>	The International Energy Agency publishes annual greenhouse gas emission factors for most countries based on their electricity and heat generation fuel mix.
<b>FINANCIAL</b>	Environmentally extended input-output models can provide estimates of associated CO2 with the production of goods using financial activity data and financial emission factors.

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## Access to Useful Data

Companies are increasingly tracking the emissions associated with their operations to meet sustainability goals, respond to their trade partners and climate policy changes, and meet growing consumer demand for lower carbon products. Already, emissions data for on-site operations and purchased electricity are easy to obtain.

For energy-intensive, primary goods like steel, aluminum, and cement, the data is straightforward and easily accessible. There are many publicly available sources for emissions data based on country of origin, industry, predominant production method, and local electricity mix. For example, the International Energy Agency publishes volumes of country-specific emissions data by industry and the World Input-Output Database collects and publishes industry energy use and emissions by sector and energy commodity.<sup>18,19</sup>

Existing data sources can be put to use immediately in developing a BCA mechanism. The available data is ample enough that scholars have tabulated approximate goods-level carbon intensity for a variety of the most carbon-intensive traded goods.<sup>20</sup> Furthermore, facility-level data can be obtained or calculated through a number of standard emissions measurement approaches and best practices put forward by groups like the International Standards Organization.<sup>21</sup> The basket of goods for which emissions data is already available and verifiable account for more than 80 percent of U.S. traded carbon.<sup>22</sup>



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The BCA would require just a subset of the data already being used by at least 9,500 international firms to estimate their emissions. Many multinationals use analytical tools like the Greenhouse Gas Protocol to identify a product's environmental impact from the extraction and processing of raw material inputs all the way through final disposal; the BCA requires only the CO<sub>2</sub> data associated with bringing a product from raw material inputs to the border. For more complex goods that make up the remainder of traded carbon, they source emissions data from their suppliers and from international consultancies that provide emissions estimates across a wide range of product types, production processes, and countries of origin. As experience in carbon accounting and analysis expands, comfort with the specific emissions data necessary to a precise BCA expands too.

## Other Existing Tools Can Fill Gaps

As governments and companies grow more confident in precise emissions data, high-quality estimates and other techniques are readily available to facilitate BCA implementation. Already in company-level carbon accounting, it is common to use assumptions for the carbon intensity of inputs where data isn't readily available. Practices for doing so are well accepted.

For example, the Intergovernmental Panel on Climate Change publishes guidelines for calculating national greenhouse gas inventories. They include standards for approximating industrial carbon intensities at varying levels of data availability.<sup>23</sup> It is also appropriate to use proxies like fuel consumption or production methods to estimate emissions in the absence of specific data. Even high-level averages, like the carbon-intensity of a national electricity grid, can forecast the average carbon intensity of production.<sup>24</sup> These kinds of proxies and emissions assumptions provide a sound, albeit imprecise, starting point for BCA administration.

## Accountability and Transparency Levers

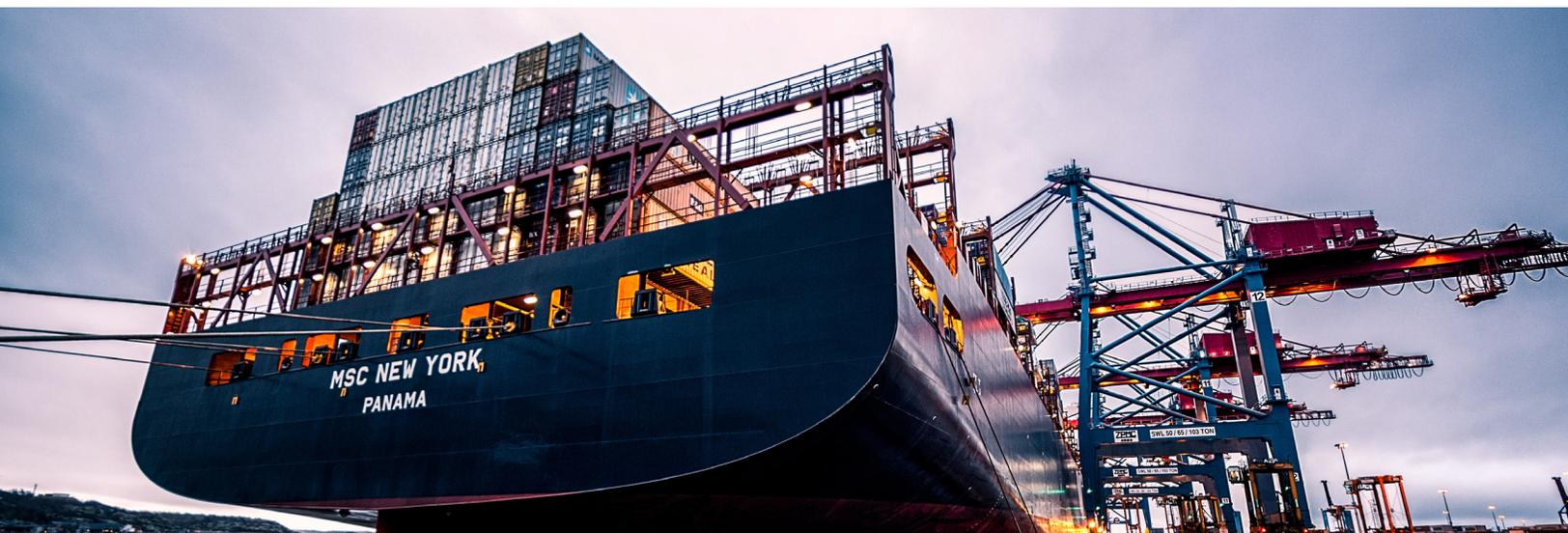
Not only do benchmark assumptions of carbon intensity provide a workable approach to BCA implementation, they can also be designed to address concerns about the availability and reliability of overseas reported data. Upon import, all goods would be subject to a benchmark assumption of the emissions intensity associated with bringing that good to the U.S. border. That benchmark can be set conservatively to reflect the higher carbon intensities for overseas products, manufacturing methods with uniquely high carbon intensities, or countries of origin that have particularly carbon-intensive electric systems. A higher default benchmark will appropriately charge the most carbon-intensive producers for their high emissions. And domestic producers, which have lower average carbon intensities than importers, will realize a competitive advantage from being cleaner.

Importers may choose to claim an emissions intensity for imported goods that is below the benchmark value. To petition for a lower adjustment value, they would have to disclose relevant parameters of their production processes and submit to approved verification. With strict standards on information disclosure and verification requirements, companies would trade the “stick” of greater oversight and disclosure for the “carrot” of a lower border adjustment value, if it can be credibly verified.

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At scale, this can provide access to reliable emissions data from countries with limited or no reporting requirements. U.S. leadership in building BCA policy ensures that U.S. lawmakers establish the rules and U.S. agencies enforce them. While rules should not be arbitrarily punitive, they can place rigorous requirements on importers to ensure high quality emissions data and verifiability procedures – and treat imports that fail to meet these data and verifiability requirements fairly.

Should companies or foreign governments object to the appropriate audits, the higher benchmark value will determine border adjustment liability. Limited data availability, poor data quality, or even refusal by an importer or foreign government would not erode the climate benefits of the BCA or the competitive benefit the BCA delivers for the cleanest producers.



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## Part Three:

# THE ADMINISTRATIVE FOUNDATION ALREADY EXISTS

The existing U.S. trade apparatus provides the foundation for BCA implementation. Three U.S. trade agencies are particularly pivotal for implementing existing charges at the border: Customs and Border Protection, the International Trade Administration, and the Justice Department. The existing approach to fuel excise taxes provides a proven model for the BCA export adjustment.

## Detailed Product Information

Customs and Border Protection enforces trade laws at the border and imposes import duties and tariffs. Existing border charges are laid out in the Harmonized Tariff Schedule (HTS), a document that is more than 4,000 pages long and defines rates based on product type and country of origin and whether the U.S. has a negotiated agreement that covers the product. The HTS is precise: it lists, for example, specific duties for plastic boxes designed to carry semiconductor wafers.<sup>25</sup> Each import is classified and assessed a duty based on the HTS. Imposing a border adjustment for carbon emissions adds no more complexity to the existing disclosure and transactions importers already engage in at the border.

## Enforcement Tools

The International Trade Administration Office of Enforcement and Compliance at the Department of Commerce already conducts investigations and due diligence to ensure that importers are abiding by U.S. trade laws and that U.S. firms can compete on a level playing field. The office performs investigations into firm activities, inspects overseas facilities, and spearheads new border measures to offset any market-distorting conduct. Enforcement and Compliance at ITA demonstrates that it is already common for the U.S. government to weed out fraudulent claims by importers

and that remedies exist to address cheating or gaming.

The Justice Department supports the existing trade apparatus by pursuing and enforcing civil and criminal penalties for fraudulent claims and other violations of trade law. Importers providing false or inaccurate information about an imported good, its value, or its country of origin face penalties under both the Customs Modernization and Informed Compliance Act and the False Claims Act. These programs have teeth: between 2010 and 2020, the Justice Department claimed \$38 billion in penalties under the False Claims Act. The BCA would extend this enforcement system to any relevant claims of emissions intensity.

## Rebate Structure

Similarly, the federal excise tax system offers a model for a BCA. The U.S. government imposes a series of excise taxes on a variety of fuels like gasoline, diesel, jet fuel, and compressed natural gas. If these fuels paid the relevant excise tax before export or before being consumed for certain exempt purposes (e.g., an international commercial flight), refunds are made to the ultimate purchaser. Likewise, when U.S. firms export goods under a BCA, the U.S. government would refund any carbon prices paid. In its most precise form, the BCA would require that suppliers report the amount of carbon price paid during each financial transaction; in a less precise, immediately implementable form, the BCA could approximate the carbon price paid using available data and analysis.<sup>26</sup>



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## Part Four:

# ULTIMATELY, A TOOL TO ENHANCE INTERNATIONAL COOPERATION

Like the concerns over BCA measurement and administration, worries that BCAs will spark a new era of trade wars are overwrought. BCAs can improve international trade cooperation as an instrument that facilitates – rather than impedes – climate goals. Indeed, revisiting trade rules so that they better serve the interests of the modern economy is essential to robust international trade.

## Limits of Current Trade

Government officials worldwide have expressed concern that the current trade regime undermines the ability of individual countries to enact policies that will accomplish domestic policy goals like wage increases, upholding human rights, and securing critical supply chains.<sup>27</sup> This is doubly true in the case of domestic climate goals. As currently designed, the rules of global trade cannot compensate climate leaders or penalize climate laggards. The cleanest manufacturers are vulnerable to competitors that deliver a lower price point by increasing carbon emissions.

Global trade rules designed to prevent discrimination also limit opportunities for markets to value goods differently according to their social or environmental impact. Governments are not allowed to treat the same

goods differently if they were produced with different methods or with different labor standards. Given these constraints, governments are facing growing pressure from citizens to limit trade or protect key domestic industries.<sup>28</sup> Increasingly, these levers are protectionist policies that nudge trade in preferred directions through cruder means, like tariffs and import quotas. These instruments cannot differentiate between the attributes of a good but can limit imports from countries that fail to uphold certain economic, social, or environmental priorities. Without a course correction, the global economic order is at risk of deteriorating as global trade is perceived to constrain domestic progress and reward international bad actors.

## A Coalition of Carbon Efficient Economies

Climate laggards are rightly worried about the impacts to their economies if their opportunities for free riding are constrained by a new system of border adjustments.<sup>29</sup> Concerned countries may challenge border adjustments formally through the WTO process or informally through other means of trade retaliation.

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However, taken together, the E.U. and U.S. make up more than 40 percent of the global economy. With Canada, the U.K., and Japan, jurisdictions publicly considering border adjustments make up more than half of the global economy. These are some of the most attractive consumer markets in the world. Retaliation from exporting countries will further hamper access to these consumer markets – and will force governments to acknowledge that their economic success comes at the expense of achieving global climate goals.

The international momentum for BCAs heralds a fundamental change to the global trade regime. While there will be opponents to this shift in global trade rules, concerns about trade disputes will dissipate as BCA-interested countries start discussing their proposals at international forums.<sup>30</sup>

Disputes mediated through the WTO will take years to resolve and are not likely to undermine the case for imposing border adjustments. A successful dispute at the WTO will likely only tweak a BCA around the edges, and climate laggards will still have to pay a higher price for their emissions.<sup>31</sup> Likewise, other retaliatory moves – like inflating commodity prices or distorting trade volumes – are no match for a permanent shift in trade rules to account for emissions. The benefits of global trade are too important for rapidly growing economies. Consider that the trade dispute between the U.S. and China is projected to reduce China's GDP by more than \$140 billion year-over-year.<sup>32</sup> Such self-inflicted injuries are not a rational response, especially if the switch to pricing emissions in trade is stable and inevitable. More likely, countries will look for ways to avoid border adjustment liability by applying their own internal carbon fees and by reducing domestic emissions.<sup>33</sup>



An ever-growing number of carbon-efficient economies presents an opportunity to cement collaboration in the form of carbon customs unions.

## Carbon Customs Unions

An ever-growing number of carbon-efficient economies presents an opportunity to cement collaboration in the form of carbon customs unions (CCUs). Such free trade agreements would use climate ambition as the key to lowering or eliminating barriers to free and open trade. Countries that enter into CCUs will have like climate ambition and implement policies designed to reduce emissions at similar scale and speed, like aligned carbon prices. Trade between these countries would face no border adjustment for carbon content, as the carbon costs to industry would be equalized across borders; trade between countries that are not aligned on climate goals, and not part of the CCU, would face the border adjustment to ensure that carbon costs are appropriately accounted for.<sup>34</sup>

But unilateral action must come first. As made clear by the public consideration of border adjustments in so many jurisdictions, there is growing domestic pressure to integrate trade considerations into domestic climate policies. There is less pressure to begin those negotiations in earnest alongside international partners. Global trade can – and will – appropriately value the different attributes of goods, and climate is the clear starting point for rethinking existing agreements.

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## Part Five:

# ADDRESSING REMAINING CHALLENGES

Though the path to BCAs is clear when designed around a domestic carbon price, work remains to ensure they function optimally in support of U.S. climate ambition and economic competitiveness. The biggest existing gap is ensuring that emissions data are useful, broadly trusted, and can be traced to the manufacture of specific goods. BCAs should also be designed to facilitate long-term cooperation with governments similarly oriented toward aligning climate ambition with trade policy.

## Standardize and Improve Emissions Data

Much of the emissions data necessary to underpin the BCA is already available. Governments, international industry associations, environmental organizations, climate accounting firms, and businesses themselves are investing in improvements to data access and reliability and establishing verification measures through frameworks like the United Nations Global Compact, the Organization for Economic Cooperation and Development, the International Standards Organization, and others. For example, the World Economic Forum has built a guide to help companies measure and reduce the emissions in their global supply chains. Meanwhile, the American Petroleum Institute has launched a template to improve the consistency and comparability of greenhouse gas emissions reporting across the oil and gas industry.<sup>35</sup> These voluntary programs are improving the quality and verifiability of emissions data across supply chains.

Expanding common, mandatory standards to more countries can also improve confidence in rigorous emissions data.<sup>36</sup> International climate negotiations have prompted new guidelines that will standardize reporting formats on a country-by-country basis but have not yet

begun to formalize facility-level reporting standards. This more detailed data will underpin emissions claims and allow firms to calculate the emissions intensity of specific goods. Climate negotiations can provide a venue for improving the availability and quality of facility-level emissions data but only a BCA system can provide a clear financial incentive.

High quality data then needs to be reliably linked from firms and facilities to specific goods, and the methodological leap to connect facility-level emissions and supply chain emissions to discrete products is not yet widely accepted. Again, work is underway, and companies and their trade associations, in conjunction with a wide variety of stakeholders with expertise in carbon accounting, manufacturing, supply chains, and trade are improving and standardizing product-specific carbon accounting methodologies.<sup>37</sup> Companies will also need tools to balance commercial confidentiality on sensitive business information with necessary disclosure for climate policies and border adjustments. These are protections that a well-crafted BCA can provide. A BCA can be implemented in the absence of refined methodologies and with available data. Over the long-term, these developments in standardizing emissions reporting will ensure that border adjustments more precisely account for actual emissions.

BCAs should also be designed to facilitate long-term cooperation with governments similarly oriented toward aligning climate ambition with trade policy.

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## Collaborate with Global Partners

There is also room for progress on the international stage. With countries that make up the majority of the global economy and the majority of historic climate emissions considering border adjustments, the subject of harmonizing climate and trade is no longer avoidable.

This starts with meaningful negotiations at WTO and UNFCCC. At present, climate diplomacy sidesteps the obstacle that trade presents to climate progress. Similarly, trade diplomacy is silent on the substantive issue of embedded carbon emissions. This stalemate is unsustainable. International negotiations must start rethinking the systemic challenges that climate and trade present to realizing globally agreed temperature targets and achieving the benefits of liberalized global trade.

International bodies will also grapple with the potential inequities that border adjustments may introduce to the climate and trade regimes, particularly as pertains to Least Developed Countries (LDCs) and low-income resource economies. The international climate framework has emphasized the principle of common but differentiated responsibilities, which holds that

developed countries should assist developing countries. This consideration may be important to address in the formulation of individual BCAs and future CCUs. Further, some resource economies may be strained by pricing carbon emissions in trade, a factor that deserves consideration. Since LDCs make up less than 5 percent of trade across all energy-intensive raw materials, a solution that accords with the existing international climate framework seems attainable.

International negotiations must start rethinking the systemic challenges that climate and trade present to realizing globally agreed temperature targets and achieving the benefits of liberalized global trade.



Claims that border adjustments are impossibly complex and too difficult to implement are not only out of step with the times, they don't hold water.

## CONCLUSION

Progress toward meaningfully reducing global emissions inevitably requires linking climate and trade policies. Indeed, many of the world's largest economies are contemplating attaching border adjustment measures to their climate strategies in order to deliver on ambitious emissions reduction commitments while preserving the competitiveness of domestic firms. Claims that border adjustments are impossibly complex and too difficult to implement are not only out of step with the times, they don't hold water.

The U.S. has the data, the expertise, and the enforcement capability to design and implement BCAs that conform to our existing trade obligations. When paired with a domestic carbon price, BCAs can be implemented quickly to enhance American competitiveness and deliver a high-ambition domestic carbon mitigation strategy. Without them, we risk failing to address the climate challenge appropriately.

It is in the U.S.'s strong interest to act first and spearhead the design of the border adjustment system. A U.S.-designed BCA is sure to benefit clean, U.S. industry

and leverage the transparent processes that already exist in our trade system. If not the U.S., another international partner will shape the BCA – and the future of international trade – consistent with trade and political priorities that may not benefit U.S. producers or consumers.

In short, border adjustments are coming. By enacting ambitious climate policy through a carbon fee, the U.S. can implement a BCA system that will deliver emissions reductions, a more vibrant U.S. economy, and a new era of global climate and trade cooperation.

# NOTES

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# NOTES

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24. See, e.g. a comparative analysis of the carbon intensity of photovoltaic manufacture across economies, which found that a leading cause for higher emissions in China relative to Europe was largely driven by the makeup of the Chinese electrical grid. Dajun Yue, Fengqi You, Seth B. Darling, Domestic and overseas manufacturing scenarios of silicon-based photovoltaics: Life cycle energy and environment comparative analysis, Solar Energy, Volume 105, July 2014. <https://www.sciencedirect.com/science/article/abs/pii/S0038092X14001935?via%3Dihub>
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26. Care would have to be given to ensure that this does not constitute an export subsidy, which would provide for retaliation at the WTO. However, given the relatively low carbon intensity of more complex goods, it is unlikely that the export adjustment would introduce significant distortions worth raising.
27. See, e.g., commentary from U.S. Trade Representative Katherine Tai in June of 2021 highlighting the “trust gap with the public about free trade,” available at <https://ustr.gov/about-us/policy-offices/press-office/speeches-and-remarks/2021/june/remarks-ambassador-katherine-tai-outlining-biden-harris-administrations-worker-centered-trade-policy>
28. The WTO recently launched trade and environmental sustainability structured discussions, though that group has not yet agreed to discuss instruments like border adjustments that could differentiate between goods based on their environmental impact. See, World Trade Organization, “First meeting held to advance work on trade and environmental sustainability, March 2021. [https://www.wto.org/english/news\\_e/news21\\_e/tessd\\_08mar21\\_e.htm](https://www.wto.org/english/news_e/news21_e/tessd_08mar21_e.htm)
29. See, e.g., the response from Rosneft chief Igor Sechin to the European border adjustment proposal, August 2021. <https://www.reuters.com/business/energy/carbon-taxes-could-hurt-russia-more-than-sanctions-says-oil-tsar-kommersant-2021-08-23/>
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33. See, e.g. comments on the European CBAM from the Turkish Industry and Business Association available at [https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12228-EU-Green-Deal-carbon-border-adjustment-mechanism-/F510157\\_en](https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12228-EU-Green-Deal-carbon-border-adjustment-mechanism-/F510157_en)
34. This model is similar to the “climate club” model proposed by Bill Nordhaus (William Nordhaus, “The Climate Club: How to Fix a Failing Global Effort,” Foreign Affairs, May/June 2020. <https://www.foreignaffairs.com/articles/united-states/2020-04-10/climate-club>). The German government has already started discussing this proposal and targets for inclusion in a CCU. See, e.g., <https://www.reuters.com/business/environment/germanys-scholz-proposes-climate-club-avoid-trade-friction-2021-05-22/>
35. World Economic Forum with Boston Consulting Group, Net Zero Challenge: The supply chain opportunity, January 2021, <https://www.weforum.org/reports/net-zero-challenge-the-supply-chain-opportunity>. American Petroleum Institute template for greenhouse gas reporting available at <https://www.api.org/news-policy-and-issues/sustainability/api-template-for-ghg-reporting>
36. For example, different estimates of Chinese CO2 emissions produced results that differed by as much as 7.5% of global emissions estimates. See, e.g., Yuli Shan, et al., “China CO2 emission accounts 1997-2015,” Scientific Data 5, 170201 (2018). <https://doi.org/10.1038/sdata.2017.201>
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