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Border Carbon Adjustments: Policy Considerations, Legislation, and Developments in the European Union

SUMMARY

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Policymakers may consider a wide array of options to reduce greenhouse gas (GHG) emissions, including emissions caps, fees, or performance standards. Although these approaches would likely limit or reduce U.S. GHG emissions, some policymakers have raised concerns about the potential effects of unilateral climate policy in the United States. A central concern is that certain domestic climate policies could cause the domestic prices of goods to increase more than the prices of similar goods manufactured abroad, potentially creating a competitive disadvantage for some domestic businesses. In addition, some argue that domestic climate policies could potentially shift economic activity to countries with less stringent or less comprehensive climate policies.

One option to address these concerns is with a border carbon adjustment (BCA). A BCA is a fee or a tariff on selected imported materials, often based on the GHG emissions associated with an imported material's production or its end use. BCAs increasingly have been a subject of high-level bilateral and multilateral discussions among countries. After several years of debating a proposed framework, the 27-member European Union (EU) finalized legislation on a BCA system known as the carbon border adjustment mechanism (CBAM) in May 2023. The first phase of the CBAM—which requires reporting but does not impose a fee—went into effect on October 1, 2023. During the second phase—scheduled to start in 2026—the EU is scheduled to impose a fee on selected imports.

When establishing a BCA, policymakers face several key questions, including (1) which materials or products to include in a BCA, (2) which countries to include in a BCA, and (3) how to determine a BCA fee on imported materials. A BCA presents substantial implementation challenges. Depending on design specifics, a BCA may require calculating the economic impact of a domestic climate policy on a wide range of domestically produced goods as well as the analogous costs in other countries. To alleviate some of these challenges, policymakers could limit the program to a select number of industries and apply a simplified set of default values and assumptions for categories of goods. Alternatively, a BCA could allow companies to provide measured, independently verified emissions data as an alternative to default values.

Some studies have questioned whether BCAs would be effective, considering the balance between expected benefits and implementation challenges, and consequences that may result from them. For example, imposition of BCAs raises a range of trade issues and other related concerns. Some analysts have expressed concern that BCAs could be (or be interpreted as) disguised protections for domestic industry. Some experts have suggested that BCAs could negatively affect developing countries in the short run. Further, some researchers have highlighted the potential for unintended consequences from a BCA.

The World Trade Organization (WTO) oversees and administers multilateral trade rules and serves as a forum for trade negotiations and trade disputes. It is uncertain whether any BCA would comply with WTO rules because a WTO dispute settlement panel has never considered the issue. In particular, it is uncertain whether a BCA would be consistent with General Agreement on Tariffs and Trade (GATT) principles. It is also uncertain whether specific GATT exceptions might allow for a BCA that would otherwise be deemed inconsistent with key GATT principles.

Members of Congress have introduced legislation that included market-based approaches (e.g., carbon taxes or fees, or cap-and-trade programs) with BCA provisions since 2007. These proposals have varied considerably in their scope, stringency (e.g., emissions reductions requirements or tax level), and compliance options. Members in the 118th Congress have introduced several proposals that include BCA provisions. As with market-based approaches from prior years, these proposals vary in their design, scope, and stringency. One key difference among the bills is whether and how they would implement a domestic price on GHG emissions (e.g., tax or fee). For example, some proposals would impose a domestic tax on GHG emissions from selected sources. Other proposals would impose a domestic emissions charge at certain facilities, based on a facility's GHG emissions intensity. One proposal would not impose a domestic fee. Another would base its BCA on the domestic methane emissions charge established in the law commonly referred to as the Inflation Reduction Act of 2022 (P.L. 117-169).

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Introduction

Greenhouse gas (GHG) emissions levels—in the United States and around the world—remain a topic of interest among policymakers and stakeholders.[1] According to a 2023 report from the Intergovernmental Panel on Climate Change (IPCC),

> Human activities, principally through emissions of greenhouse gases, have unequivocally caused global warming.... Continued greenhouse gas emissions will lead to increasing global warming.... Some future changes are unavoidable and/or irreversible but can be limited by deep, rapid and sustained global greenhouse gas emissions reduction.[2]

Policymakers may consider a wide array of options to reduce GHG emissions. These options include a GHG cap-and-trade system,[3] a tax or fee on GHG emissions,[4] facility performance standards, tax incentives, or direct funding, among other policy approaches.[5] Although these approaches would likely limit or reduce U.S. GHG emissions,[6] some policymakers have raised concerns about the potential effects of unilateral climate policy in the United States.[7] For example, one concern is that certain domestic climate policies could cause the domestic prices of goods to increase more than the prices of similar goods manufactured abroad, potentially creating a competitive disadvantage for some domestic businesses. In addition, some argue that domestic climate policies could potentially shift economic activity to countries with less stringent or less comprehensive climate policies. Such a shift could undermine the climate objectives of the domestic policy if the shift results in increased GHG emissions in the other country. Whether and to what degree these outcomes occur would depend on a number of factors. Examples of factors include the design and stringency of the domestic policy and how the domestic policy compares to climate policies in other countries.

[1] The primary greenhouse gases (GHGs) emitted by human activities—and estimated by the U.S. Environmental Protection Agency (EPA) in its annual inventories—include carbon dioxide (CO_2), methane, nitrous oxide, sulfur hexafluoride, chlorofluorocarbons, hydrofluorocarbons, and perfluorocarbons. Other GHGs include carbonaceous and sulfuric aerosols, hydrochlorofluorocarbons, and elevated tropospheric ozone pollution generated by emissions of nitrogen oxides and volatile organic compounds, such as solvents.

[2] Intergovernmental Panel on Climate Change, *Synthesis Report of the IPCC Sixth Assessment Report—Summary for Policymakers*, April 2023, at https://www.ipcc.ch/report/ar6/syr/.

[3] A GHG emissions cap-and-trade system places a limit (i.e., cap) on GHG emissions from certain sources, such as power plants and industrial facilities. An emissions cap is partitioned into emissions allowances, which typically represent the authority to emit 1 metric ton of GHG emissions. An implementing agency may allocate allowances to sources at no cost or sell them through an auction. At the end of an established compliance period (e.g., one year), covered sources submit emissions allowances to an implementing agency to cover the number of tons of GHGs emitted during the period. To comply with the cap, covered sources can either reduce emissions on-site or purchase emissions allowances from other sources (i.e., trade). The European Union has had a cap-and-trade system in place for almost 20 years. In the United States, cap-and-trade programs operate in a number of states: California, Washington, and in the Regional Greenhouse Gas Initiative (RGGI), a program involving a number of Northeast states.

[4] A tax or fee on GHG emissions (often called a *carbon tax*) attaches a price to GHG emissions or the inputs (e.g., fossil fuels) that create them. A carbon tax would increase the relative price of the more carbon-intensive energy sources. This result is expected to spur innovation in less carbon-intensive technologies (e.g., renewable energy) and stimulate other behavior that may decrease emissions. For more information, see CRS In Focus IF11103, *A Brief Comparison of Two Climate Change Mitigation Approaches: Cap-and-Trade and Carbon Tax (or Fee)*, by Jonathan L. Ramseur.

[5] For more information, see CRS In Focus IF11791, *Mitigating Greenhouse Gas Emissions: Selected Policy Options*, by Jonathan L. Ramseur et al.

[6] The degree to which a particular policy tool would avoid or reduce GHG emissions—and thus mitigate climate change effects—would depend on a range of factors. This issue is beyond the scope of this report.

[7] Many of these approaches are under way or being developed by national governments and subnational entities (e.g., state governments) throughout the world.

Policymakers have several options to address these potential outcomes. One option that has received attention in recent years is a border carbon adjustment (BCA).[8] A BCA is a fee or tariff on selected imported materials. The fee is often based on the GHG emissions associated with an imported material's production or its end use. For example, fossil fuel end use often involves combustion, which results in GHG emissions. Such emissions are sometimes referred to as *embodied carbon* or *embodied emissions*.[9]

Members of Congress have introduced GHG emissions reduction proposals that included complementary BCA provisions since 2007.[10] Members in the 118th Congress have introduced several proposals that include BCA provisions. As with prior proposals, the bills vary in their design, scope, and stringency. One key difference among the bills is whether and how they would implement a domestic price on GHG emissions (e.g., tax or fee).

In addition, BCAs have increasingly been a subject of high-level bilateral and multilateral discussions among countries. After several years of debating a proposed framework, the 27-member European Union (EU)[11] finalized legislation on a BCA system known as the carbon border adjustment mechanism (CBAM) in May 2023.[12] The CBAM is part of a larger agreement that includes changes to the EU Emissions Trading System, a GHG emissions cap-and-trade program that has been in place since 2005.[13] The first phase of the CBAM—which requires reporting but does not impose a fee—went into effect on October 1, 2023. In the second phase—scheduled to start in 2026—the EU is scheduled to impose a fee on selected imports.

The recent implementation of the EU CBAM has received attention from some policymakers and U.S. stakeholders. Estimating the potential effects of the EU CBAM on U.S. industries that export to the EU is challenging. Although the CBAM is scheduled to impose tariffs on U.S. exports, some analyses indicate the tariffs on U.S. goods may be smaller than tariffs on goods from other countries that export to the EU, because the GHG emissions intensity[14] of some of the CBAM-eligible industries may be lower in the United States than other countries.[15] However, some of these countries may have climate policies in place (e.g., carbon prices) that will allow their exporting industries to reduce the CBAM tariffs on their exports. A comprehensive assessment of these issues is beyond the scope of this report.

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[8] Policymakers, stakeholders, and researchers refer to these mechanisms by a variety of names, including *border adjustments*, *border tax adjustments*, *border carbon adjustment mechanisms*, or *carbon border adjustment mechanism* (the term used in the EU), among others. This report uses the term *border carbon adjustments* (BCAs).

[9] See, for example, EPA, "What Is Embodied Carbon?" at https://www.epa.gov/greenerproducts/what-embodied-carbon.

[10] A comparison of these provisions and proposals is included in CRS Report R45472, *Market-Based Greenhouse Gas Emission Reduction Legislation: 108th Through 117th Congresses*, by Jonathan L. Ramseur. In addition, as a component of its climate policies, California has a mechanism to address imported electricity from surrounding states. See California Air Resources Board, "Cap-and-Trade Program," https://ww2.arb.ca.gov/our-work/programs/cap-and-trade-program. Some argue this is a form of a BCA. See, for example, Aaron Cosbey et al., "Developing Guidance for Implementing Border Carbon Adjustments: Lessons, Cautions, and Research Needs from the Literature," *Review of Environmental Economics and Policy*, vol. 13, no. 1 (2019).

[11] For more details, see CRS In Focus IF11211, *The European Parliament and U.S. Interests*, by Kristin Archick; see also European Parliamentary Research Service, *EU Carbon Border Adjustment Mechanism Implications for Climate and Competitiveness*, June 2022, https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2022)698889.

[12] Regulation 2023/956 of the European Parliament and of the Council, May 10, 2023, establishing a carbon border adjustment mechanism, *Official Journal of the European Union*, May 16, 2023, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2023:130:FULL (hereinafter EU 2023 CBAM regulations).

[13] For more information, see European Commission, "EU Emissions Trading System (EU ETS)," https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets_en.

[14] GHG emissions intensity typically refers to an industry's (or facility's) total GHG emissions divided by a measure of its total production, which may be measured by weight, volume, or value.

[15] See, for example, Climate Leadership Council, "Potential CBAM Impacts on U.S. Industry," 2023, https://clcouncil.org/blog/potential-cbam-impacts-on-u-s-industry/.

As of the date of this report, the CBAM is the only BCA in effect. Potential BCA developments in other countries would likely receive similar attention from policymakers. An examination of potential BCAs in other countries is beyond the scope of this report.[16]

This report is organized as follows:

- The first section provides background information and context, explains what BCAs are, examines some of their implementation challenges, and discusses alternative approaches.
- The second section examines the scope and stringency of the EU CBAM.
- The third section discusses World Trade Organization (WTO) issues.
- The fourth section discusses other trade-related issues involving BCAs.
- The final section discusses and compares BCA legislation in the 118th Congress.

Background and Context

For decades, countries have implemented a wide range of climate change policies, including GHG emissions reduction requirements. GHG emissions reduction policies may involve a range of approaches, including emissions caps or fees, or regulatory standards. The motivations for these policies have varied by country. International agreements have played a role in policy development and implementation. For example, under the 2015 Paris Agreement, all Parties agreed to submit "Nationally Determined Contributions" (NDCs) containing nonbinding pledges to mitigate GHG emissions, among other actions.[17] Parties agreed to update or submit new NDCs by 2020 and every five years thereafter.[18] GHG emissions reduction goals in the NDCs vary across countries, according to their "common but differentiated responsibilities," under the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement.[19] The national climate change policies required to achieve these commitments would likely differ in terms of scope, stringency, and timing.

Assuming the NDC policies are implemented and the goals achieved, they would likely result in a range of economic impacts within and across countries.[20] For example, a 2017 study estimated the cost of

[16] The Canadian government stated in 2021 that it is "exploring BCAs as a tool" to address potential impacts from its carbon pricing policies. Canadian government officials conducted a consultation process among stakeholders seeking input on BCA issues in the context of Canada's national carbon tax framework (see Government of Canada, "Exploring Border Carbon Adjustments for Canada," https://www.canada.ca/en/department-finance/programs/consultations/2021/border-carbon-adjustments/exploring-border-carbon-adjustments-canada.html). As Canada is one of the top trading partners with the United States, a Canadian BCA—depending on its scope and stringency—would also likely raise concerns for policymakers and affected stakeholders (see U.S. Census, "Top Trading Partners—March 2024," https://www.census.gov/foreign-trade/statistics/highlights/topyr.html#total).

[17] The Paris Agreement is an international treaty under the United Nations Framework Convention on Climate Change (UNFCCC), which since 1992 has been the primary international treaty among national governments to address GHG-induced climate change. For more information about the Paris Agreement NDCs, see CRS Report R46945, *Greenhouse Gas Emission Reduction Pledges by Selected Countries: Nationally Determined Contributions and Net-Zero Legislation*, by Kezee Procita and Claire M. Jordan.

[18] Each successive nationally determined contribution (NDC) of a Party "will represent a progression" and "reflect its highest possible ambition, reflecting its common but differentiated responsibilities and respective capabilities, in light of different national circumstances."

[19] The UNFCCC Article 2 includes the principle of "common but differentiated responsibilities and respective capabilities," sometimes with the acronym CBD-RC, which carries over in its subsidiary Paris Agreement.

[20] Based on past experience with international commitments to reduce GHG emissions (including prior U.S. targets), the degree to which these emissions targets will be met is uncertain. For example, recent studies indicate that the United States will not meet its 2030 emissions goal. See CRS Report R47385, *U.S. Greenhouse Gas Emissions Trends and Projections from the Inflation Reduction Act*, by Jonathan L. Ramseur.

emissions reduction in selected countries to meet their individual NDCs.[21] The study's cost estimates are comparable to an estimate of the carbon price (e.g., tax or fee) that would be needed in particular countries to achieve their NDCs. Although the study's estimated results are outdated for several reasons (e.g., many countries have updated their NDCs since the study's publication), the relative cost estimates may be instructive. For example, cost estimates in China and India were lower than estimates for the EU and Japan, as the former countries' goals are less stringent than those of the latter countries. The U.S. cost estimates fell between these two endpoints.[22]

One concern among some policymakers is that differing climate policies (described above) could cause the domestic prices of U.S. goods to increase more than the prices of similar goods manufactured abroad.[23] Such an outcome could lead to increased market share of goods from other countries, potentially creating a competitive disadvantage for some domestic businesses. A range of factors would play a role in determining these potential outcomes. For example, factors that may influence the potential price differences include the scope, stringency, and timing of the U.S. climate policy and how the U.S. policy compares with climate policies in other countries. The potential concerns associated with differing climate policies are particularly relevant for "emissions-intensive, trade-exposed" industries, such as steel manufacturing, as discussed below.

Although some industries may become less profitable, lose market share, or reduce jobs as a result of differing climate policies, not all businesses within a sector may be affected similarly. Depending on the specific circumstances, some businesses may receive a competitive advantage compared to their domestic counterparts. For example, under an emissions cap or carbon price framework, a company using electricity produced with hydropower would experience less cost increase than a company using electricity produced with coal. In addition, some businesses may be more energy efficient than others or use processes that result in lower emissions. Further, some industries or companies may be able to reduce their emissions in response to the new policies at lower cost than others.

A second key concern is that differences among countries' climate policies could create incentives to shift economic activities to countries with less stringent or less comprehensive climate policies, ultimately leading to "emissions leakage." In general, GHG emissions leakage can occur if a policy to reduce domestic emissions (e.g., emissions cap) in one location leads to an increase in emissions in another location, thus undermining emissions reductions resulting from the domestic climate policy.[24] For example, if one country imposes a fee on GHG emissions from certain domestic industries (thus imposing a cost), a company in this industry may decide to move its operations to another country that does not impose a comparable fee (thus reducing the costs to the company). Although this potential outcome would reduce GHG emissions in the first country, the GHG emissions would continue ("leak") in the second country. Policymakers might consider several approaches (discussed below) to address these potential concerns. One approach that has received interest in recent years is a BCA. The sections below discuss the concept, scope, and logistics of a BCA approach.

[21] See Keigo Akimoto et al., "The Analyses on the Economic Costs for Achieving the Nationally Determined Contributions and the Expected Global Emission Pathways," *Evolutionary and Institutional Economics Review*, vol. 14 (2017).

[22] The study authors stated that some countries' estimated abatement costs were zero, because these countries could meet their NDCs using "business-as-usual" climate policies.

[23] See, for example, Sen. Bill Cassidy, "Cassidy Leads Republican Senate Opposition to a Carbon Tax," press release, October 2023, https://www.cassidy.senate.gov/newsroom/press-releases/cassidy-leads-republican-senate-opposition-to-a-carbon-tax/.

[24] Some studies have raised questions regarding the degree to which emissions leakage would be a concern under a unilateral approach. This issue is beyond the scope of this report. See, for example, Warwick McKibbin et al., "The Role of Border Carbon Adjustments in a U.S. Carbon Tax," *Climate Change Economics*, vol. 9, no. 1 (2018); Adele Morris, *Making Border Carbon Adjustments Work in Law and Practice*, Tax Policy Center (2018); and Joseph Aldy, "Frameworks for Evaluating Policy Approaches to Address the Competitiveness Concerns of Mitigating Greenhouse Gas Emissions," *National Tax Journal*, vol. 70, no. 2 (2017).

What Are Border Carbon Adjustments (BCAs)?

A BCA is a trade-related measure, such as an import fee or tariff,[25] intended to address economic outcomes that may result from differing climate change mitigation policies among national governments (e.g., emissions caps, prices, or standards). Generally, BCAs seek to address concerns involving domestic competitiveness and emissions leakage (as described above).[26] For example, using the scenario described above—in which one country imposes a fee on GHG emissions from certain domestic industries—that country may also impose a BCA (i.e., fee) on imported materials that are produced in other countries in the same industrial sectors.

In addition, some argue that BCAs could encourage other countries to adopt comparable climate policies to reduce the economic impact of a BCA on their exports.[27] Such policies could involve a climate/trade agreement with the country imposing the BCA.[28] BCAs also provide an incentive for exporting companies or industries to modify their operations in order to face a reduced fee when they export to a country with a BCA.

When establishing a BCA, policymakers face several key questions, including the following:

- Which materials or products to include in a BCA?
- Which countries to include in a BCA?
- How to determine a BCA fee on imported materials?[29]

Which Materials or Products to Include in a BCA?

Many BCA approaches would apply a fee to imported goods from industrial sectors expected to experience the greatest impacts from unilateral climate policies. These industries are often described as *emission-intensive, trade-exposed*.[30] A measure of an industry's GHG emissions intensity generally includes the following:

- emissions directly from its manufacturing process, such as carbon dioxide (CO_2) from cement or steel production (often referred to as *direct emissions*);[31] and

[25] A *tariff* is a customs duty levied on imported and exported goods and services. For more background, see CRS In Focus IF11030, *U.S. Tariff Policy: Overview*, by Christopher A. Casey.

[26] Michael Keen et al., *Border Carbon Adjustments: Rationale, Design and Impact*, International Monetary Fund, 2021, https://www.imf.org/-/media/Files/Publications/WP/2021/English/wpiea2021239-print-pdf.ashx.

[27] See, for example, Adele Morris, *Making Border Carbon Adjustments Work in Law and Practice*, Tax Policy Center, 2018.

[28] Bilateral or multilateral agreements involving BCAs and carbon pricing are sometimes described as "carbon clubs" or "climate clubs." See William Nordhaus, "Climate Clubs: Overcoming Free-riding in International Climate Policy," *American Economic Review*, vol. 105, no. 4 (2015), https://ycsg.yale.edu/sites/default/files/files/nordhaus-climate-clubs.pdf.

[29] A number of researchers have examined these questions and other design issues associated with BCAs. See, for example, Brian Flannery et al., *Framework Proposal for a US Upstream GHG Tax with WTO-Compliant Border Adjustments: 2020 Update*, Resources for the Future, 2020; Aaron Cosbey et al., "Developing Guidance for Implementing Border Carbon Adjustments: Lessons, Cautions, and Research Needs from the Literature," *Review of Environmental Economics and Policy*, vol. 13, no. 1 (2019); and Samuel Kortum and David Weisbach, "The Design of Border Adjustments for Carbon Prices," *National Tax Journal*, vol. 70, no. 2 (June 2017).

[30] See, for example, Interagency Report, *The Effects of H.R. 2454 on International Competitiveness and Emission Leakage in Energy-Intensive Trade-Exposed Industries*, 2009, https://www.epa.gov/sites/default/files/2016-07/documents/interagencyreport_competitiveness-emissionleakage.pdf.

[31] GHG emissions in this context may be referred to as *direct*, *onsite*, or *Scope 1 emissions* (the terminology used in a number of GHG reporting programs).

- emissions associated with the inputs (e.g., electricity, natural gas) to the manufacturing processes (often referred to as *indirect emissions*).[32]

Emissions-intensive industries would be impacted by climate policies affecting either direct emissions during the manufacturing process or emissions from suppliers, such as electricity generators, that may pass higher costs through to electricity consumers. Emission-intensive industries are likely to experience greater cost increases than less emission-intensive industries, all else being equal.

Trade-exposed industries are those that face greater international competition compared to other domestic industries. One measure of a sector's trade exposure is the proportional value of its exports and imports compared with its total value of domestic production and imports.[33] A trade-exposed industry would have more difficulty passing along climate policy costs (e.g., from emissions fees) to consumers, as doing so would likely result in a loss of its market share. These potential effects on domestic *trade-exposed* industries would depend on the characteristics (e.g., stringency) of the domestic climate policy and the climate policies imposed on their competitors in other countries, among other factors. For example, if the United States imposed a carbon tax on GHG emissions from a *trade-exposed* industry, that industry would face a competitive disadvantage if its counterpart in other countries was not subject to a comparable carbon tax on its domestic industry.

A 2009 interagency report prepared during the consideration of federal GHG reduction legislation identified industrial sectors that would meet specific emission-intensive, trade-exposed criteria.[34] For the most part, these sectors included industries in chemical, paper, nonmetallic minerals (e.g., cement and glass), and primary metals (e.g., aluminum and steel) sectors.

In addition, a BCA framework may apply to materials or products, such as fossil fuels, that generate GHG emissions when used. Some sectors in the fossil fuel industry (e.g., petroleum refining) may also be considered emissions-intensive and trade-exposed.

Which Countries to Include in a BCA?

Policymakers may consider including or excluding materials from some countries from a BCA for a range of reasons. For example, a BCA may exclude imports from countries that have climate policies (e.g., carbon prices) that are comparable to domestic policies. In recent U.S. federal legislative proposals, BCAs would apply fees to imported goods from countries that do not have climate policies comparable with those of the United States.[35] Under this approach, the federal agency in charge of implementing the BCA program, such as the Department of the Treasury, would generally be required to make this determination. How such determinations of climate policy parity are made, and by whom, can raise challenging technical and policy issues.

[32] GHG emissions in this context may be referred to as *indirect*, *upstream*, or *Scope 2 emissions*.

[33] See, for example, Interagency Report, *The Effects of H.R. 2454 on International Competitiveness and Emission Leakage in Energy-Intensive Trade-Exposed Industries*, 2009, https://www.epa.gov/sites/default/files/2016-07/documents/interagencyreport_competitiveness-emissionleakage.pdf.

[34] Interagency Report, *The Effects of H.R. 2454 on International Competitiveness and Emission Leakage in Energy-Intensive Trade-Exposed Industries*, 2009, https://www.epa.gov/sites/default/files/2016-07/documents/interagencyreport_competitiveness-emissionleakage.pdf. Federal agencies in the Obama Administration prepared this report in response to a request from several Senators considering H.R. 2454 (111th Congress) and related legislation. H.R. 2454 ("Waxman-Markey") passed the House in 2009 and would have established a GHG emissions cap-and-trade program, among other provisions. The legislation included emissions allowance rebates and other assistance for industries based on their energy intensity and trade intensity. It also included an "international reserve allowance" system, which was a type of BCA.

[35] See CRS Report R45472, *Market-Based Greenhouse Gas Emission Reduction Legislation: 108th Through 117th Congresses*, by Jonathan L. Ramseur.

Policymakers may consider excluding goods from selected countries from a BCA. For example, BCAs could exclude goods from less developed countries or materials from countries whose trade of covered materials is below certain volume thresholds.[36] The former might encourage economic development in the exporting country. The latter might reduce the administrative burden on the country with the BCA. However, such exclusions might raise legal concerns in the WTO (see "World Trade Organization (WTO) Issues" below). In addition, such exclusions could potentially have unintended consequences that could undermine the BCA policy goals. For example, such exclusions could lead to emissions leakage if domestic industries shifted their operations to these excluded countries. The degree to which such leakage might occur under these exclusions is uncertain, subject to a range of factors, and beyond the scope of this report.[37]

How to Determine a BCA Fee on Imported Materials?

A BCA typically levies a fee on the estimated tons of GHG emissions associated with selected imported materials, often described as a material's embodied emissions or its carbon or emissions content.[38] Levying a BCA fee would require two calculations: (1) an estimate of a material's embodied emissions and (2) a determination of the rate of the fee to apply to the embodied emissions.

The first calculation—embodied emissions—is generally based on estimates of the GHG emissions generated during the manufacturing process of the imported product (e.g., steel).[39] Policymakers would need to determine the scope of the emissions they wanted to include as embodied emissions. For example, embodied emissions generally would include *direct* emissions (described above) and may also include *indirect* emissions. In addition, the embodied emissions may include emissions generated further *upstream* in the production process. For example, embodied emissions could include emissions associated with the extraction of raw materials—fossil fuels, iron ore, wood.[40] If applicable, embodied emissions may include the emissions generated when a product is used (e.g., fossil fuel combustion or fertilizer application).

This first calculation presents implementation challenges.[41] For example, accurately determining and verifying the volume of GHG emissions embodied in a particular imported product is data intensive. Depending on the BCA design, the data required to implement the program may not be available, or they may not be available from a source deemed to be authoritative. This concern about the availability of authoritative data led to the proposed S. 1863 (PROVE IT Act of 2024) in the 118th Congress, discussed below.

To alleviate some of these data challenges, policymakers could limit the program to a select number of industries and apply a simplified set of default values and assumptions for categories of materials. For example, some have proposed using average emissions values for particular sectors (e.g., steel) and for

[36] See, for example, Aaron Cosbey et al., "Developing Guidance for Implementing Border Carbon Adjustments: Lessons, Cautions, and Research Needs from the Literature," *Review of Environmental Economics and Policy*, vol. 13, no. 1 (2019).

[37] See, for example, Warwick McKibbin et al., "The Role of Border Carbon Adjustments in a U.S. Carbon Tax," *Climate Change Economics*, vol. 9, no. 1 (2018).

[38] This is sometimes referred to as *embedded emissions* as well.

[39] See, for example, Samuel Kortum and David Weisbach, "The Design of Border Adjustments for Carbon Prices," *National Tax Journal*, vol. 70, no. 2 (June 2017).

[40] For a discussion of some of these options, see, for example, Silverado Policy Accelerator, "Technical Note: Carbon Accounting for Traded Goods," 2023, https://silverado.org/reports-and-publications/net-zero-trade-policy-a-compendium-of-technical-notes/.

[41] See, for example, Marco Sakai and John Barrett, "Border Carbon Adjustments: Addressing Emissions Embodied in Trade," *Energy Policy*, vol. 92 (2016); Sam Kortum and David Weisbach, "Border Adjustment for Carbon Emissions," Resources for the Future, 2016; Carolyn Fischer et al., "Carbon Taxes and Energy-Intensive Trade-Exposed Industries," in *Implementing a U.S. Carbon Tax: Challenges and Debates*, ed. Ian Parry et al. (Washington, DC: International Monetary Fund, 2015).

different countries.[42] In addition, policymakers could alleviate some of the data challenges by narrowing the scope of embodied emissions. For instance, direct (onsite) emissions data are more readily available than indirect (offsite) emissions data. Requiring upstream emissions data would likely present further challenges. Although these approaches may reduce the administrative burden for importing companies and regulators, these approaches could result in less precise import price adjustments, which could potentially affect the GHG emissions reductions achieved by the program.[43]

In addition, a default value approach (e.g., sectoral averages) could be a disadvantage for some exporting firms if they have made efforts to reduce their emissions intensity, compared to others in their sector. To address this potential outcome, a BCA could allow companies to provide measured, independently verified emissions data as an alternative to default values. Emerging technologies, such as improved sensors and digital ledgers, may allow for increasing reliability of tracking products through supply chains. Although this approach may impose additional costs on an exporting company, the approach may result in net benefits for a company (under certain circumstances) due to a reduced BCA fee for the company's exported materials.

The second calculation involves a determination of the rate of the fee. The rate of the fee is typically based on a domestic carbon price in the country of import, such as a carbon tax or emissions fee.[44] The scope of a domestic carbon price may vary.[45] For example, some carbon prices may apply only to GHG emissions from fossil fuels; others may also include GHG emissions from industrial processes. Although *emissions-intensive* industries may not be directly subject to a carbon price in the first approach (i.e., they are not required to pay a fee to the government), these industries would experience cost impacts with either approach.

While a calculation involving a carbon price and its impact on materials directly subject to the price—often coal, natural gas, and oil—is relatively straightforward, a calculation involving a carbon price and its impact on materials that are not directly subject to a carbon price—such as steel, cement, or fertilizer—is more complicated. Analogous calculations for imported goods produced in other countries—goods that might cross national borders multiple times before being shipped to the importing country—further increase the complexity of the program.

In addition, BCA frameworks may include a policy mechanism that would adjust the import fee to account for the climate policies (and policy costs) in place in the exporting country. For example, if an exporting country had a domestic carbon tax of $20 per metric ton of carbon dioxide-equivalent ($mtCO_2e$), and the importing country had a carbon tax of $50 per $mtCO_2e$, the rate of the BCA fee in the importing country might be adjusted to $30 per $mtCO_2e$.[46] Although this example is relatively simple, this

[42] See, for example, Michael A. Mehling et al., "Designing Border Carbon Adjustments for Enhanced Climate Action," *The American Society of International Law*, vol. 113, no. 3 (2019); Aaron Cosbey et al., "Developing Guidance for Implementing Border Carbon Adjustments: Lessons, Cautions, and Research Needs from the Literature," *Review of Environmental Economics and Policy*, vol. 13, no. 1 (2019).

[43] Congressional Budget Office, *Border Adjustments for Economywide Policies That Impose a Price on Greenhouse Gas Emissions*, 2013.

[44] See, for example, Michael A. Mehling et al., "Designing Border Carbon Adjustments for Enhanced Climate Action," *The American Society of International Law*, vol. 113, no. 3 (2019); Aaron Cosbey et al., "Developing Guidance for Implementing Border Carbon Adjustments: Lessons, Cautions, and Research Needs from the Literature," *Review of Environmental Economics and Policy*, vol. 13, no. 1 (2019).

[45] For example, see the range of proposals in CRS Report R45472, *Market-Based Greenhouse Gas Emission Reduction Legislation: 108th Through 117th Congresses*, by Jonathan L. Ramseur.

[46] This term of measure is used because GHGs vary by global warming potential (GWP). GWP is an index developed by the Intergovernmental Panel on Climate Change (IPCC) that allows comparisons of the heat-trapping ability of different gases over a period of time, typically 100 years. Consistent with international GHG reporting requirements, EPA's most recent GHG inventory (with data from 2022) uses the GWP values presented in the IPCC's 2013 *Fifth Assessment Report*. For example, based (continued...)

adjustment mechanism may pose additional challenges, depending on specifics of the required information.[47] For example, an adjustment based on GHG emissions intensity between industrial sectors in two countries would likely be more challenging, as this adjustment would likely raise concerns regarding the availability of authoritative data.

Implementation of a BCA on imported materials would likely face additional challenges. A comprehensive discussion of these challenges is beyond the scope of this report.

BCA Revenues

A BCA would also generate a new source of revenue for the United States. Policymakers could apply the revenues to support a range of objectives, which may or may not be related to climate change mitigation.[48] Many proposals from prior Congresses that included carbon pricing (e.g., a GHG emissions fee) with a BCA did not direct BCA revenues to specific purposes.[49] In those situations, BCA revenues would go to the General Fund of the Treasury.[50]

The policy considerations for BCA revenues may be different from the considerations for revenues generated by a domestic fee or tax on GHG emissions.[51] While a fee on U.S. GHG emissions or their inputs (e.g., fossil fuels) would affect domestic industries and ultimately consumers,[52] the economic effects of a BCA may be more complex. Some studies indicate that a BCA could have disproportionate impacts on developing countries.[53] For that reason, some have argued that BCA revenues could be used to support climate change objectives in these countries.[54] As discussed below, distribution of BCA revenues could raise particular concerns under the WTO.

on these GWP values, a ton of methane is 28 times more potent than a ton of CO_2 when averaged over a 100-year time frame. EPA's inventory is available at EPA, "Inventory of U.S. Greenhouse Gas Emissions and Sinks," https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks.

[47] Some proposed BCA frameworks (e.g., S. 2378 from the 117th Congress) would base an import fee on a calculation of implicit carbon prices from regulatory programs or other related policies.

[48] For a general discussion of some of the considerations and trade-offs when allocating revenue from a carbon pricing framework, see CRS Report R45625, *Attaching a Price to Greenhouse Gas Emissions with a Carbon Tax or Emissions Fee: Considerations and Potential Impacts*, by Jonathan L. Ramseur and Jane A. Leggett. Some of the revenue options discussed in this report may not be applicable to revenues from a BCA.

[49] See CRS Report R45472, *Market-Based Greenhouse Gas Emission Reduction Legislation: 108th Through 117th Congresses*, by Jonathan L. Ramseur.

[50] The Miscellaneous Receipts Act (31 U.S.C. §3302) requires officials who receive money on the U.S. government's behalf to "deposit the money in the Treasury as soon as practicable without deduction for any charge or claim."

[51] CRS Report R45625, *Attaching a Price to Greenhouse Gas Emissions with a Carbon Tax or Emissions Fee: Considerations and Potential Impacts*, by Jonathan L. Ramseur and Jane A. Leggett.

[52] Many economic analyses have found that a fee or tax on GHG emissions (or their inputs) would produce a regressive outcome among households, with lower-income households facing a larger impact from the tax than higher-income households. See CRS Report R45625, *Attaching a Price to Greenhouse Gas Emissions with a Carbon Tax or Emissions Fee: Considerations and Potential Impacts*, by Jonathan L. Ramseur and Jane A. Leggett.

[53] See, for example, African Climate Foundation and the London School of Economics and Political Science, *Implications for African Countries of a Border Carbon Adjustment Mechanism in the EU*, 2023, https://africanclimatefoundation.org/research-article/implications-for-african-countries-of-a-carbon-border-adjustment-mechanism-in-the-eu/.

[54] See, for example, Andrei Marcu et al., *The Use of CBAM Revenues*, European Roundtable on Climate Change and Sustainable Transition, June 2024, https://ercst.org/the-use-of-cbam-revenues/.

European Union Carbon Border Adjustment Mechanism

After several years of debate, the EU finalized legislation on a BCA system in May 2023.[55] This system is known as the European Union Carbon Border Adjustment Mechanism (CBAM). The first phase of CBAM—which requires reporting but does not impose a fee—went into effect in October 2023. Under the second phase, scheduled for the beginning of 2026, the EU is scheduled to impose a fee on selected imports.

This section provides background and context for the CBAM, describes how it functions, and compares its effects across countries that export covered materials to the EU.

Background

The European Commission—which represents the interests of the EU as a whole and functions as the EU's executive—introduced a CBAM proposal in July 2021.[56] The Council of the EU—which represents the interests of the national governments of the member states—reached agreement on its approach for the proposed BCA framework in March 2022.[57] The European Parliament adopted its own position on the BCA framework in June 2022.[58] In December 2022, the European Parliament and the Council of the EU reached a provisional agreement on a BCA framework, as part of a larger legislative and policy package (known as "Fit for 55") that included changes to the EU Emissions Trading System.[59] The European Parliament and the Council of the EU share legislative power and must both formally approve the provisional agreement for it to become EU law.[60] This formal approval occurred in May 2023, as the EU finalized legislation establishing a BCA, known as the carbon border adjustment mechanism (CBAM).[61]

The first phase of the CBAM went into effect on October 1, 2023. During this phase, importers of eligible products are required to report the GHG emissions embedded in their imported products.[62] Starting in 2026, the CBAM is scheduled to require importers to submit payments for the GHG emissions associated with their covered imported materials.[63]

[55] Regulation 2023/956 of the European Parliament and of the Council, May 10, 2023, establishing a carbon border adjustment mechanism, *Official Journal of the European Union*, May 16, 2023, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2023:130:FULL.

[56] For more information, see European Commission, "Carbon Border Adjustment Mechanism," https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en.

[57] Council of the European Union, "Council Agrees on the Carbon Border Adjustment Mechanism (CBAM)," press release, March 15, 2022, https://www.consilium.europa.eu/en/press/press-releases/2022/03/15/carbon-border-adjustment-mechanism-cbam-council-agrees-its-negotiating-mandate/.

[58] European Parliament, "Climate Change: Parliament Pushes for Faster EU Action and Energy Independence," press release, June 22, 2022, https://www.europarl.europa.eu/news/en/press-room/20220616IPR33219/climate-change-parliament-pushes-for-faster-eu-action-and-energy-independence.

[59] European Parliament, "Climate Change: Deal on a More Ambitious Emissions Trading System (ETS)," press release, December 18, 2022, https://www.europarl.europa.eu/news/en/press-room/20221212IPR64527/climate-change-deal-on-a-more-ambitious-emissions-trading-system-ets; and Council of the European Union, "'Fit for 55': Council and Parliament Reach Provisional Deal on EU Emissions Trading System and the Social Climate Fund," press release, December 18, 2022, https://www.consilium.europa.eu/en/press/press-releases/2022/12/18/fit-for-55-council-and-parliament-reach-provisional-deal-on-eu-emissions-trading-system-and-the-social-climate-fund/.

[60] For more information on the legislative process in the EU, see European Parliament, "Interinstitutional Negotiations," https://www.europarl.europa.eu/olp/en/interinstitutional-negotiations.

[61] EU 2023 CBAM regulations.

[62] EU 2023 CBAM regulations, Article 2.

[63] EU 2023 CBAM regulations, Article 6.

The CBAM complements the EU's principal GHG mitigation policy mechanism: the Emissions Trading System (ETS). The ETS is a GHG emissions cap-and-trade program that started in 2005 and covers emissions from the electricity sector, selected energy-intensive industries, and aviation.[64] Similar to other cap-and-trade systems, the ETS emissions cap is partitioned into emissions allowances. One emissions allowance represents the authority to emit 1 $mtCO_2e$. The emissions cap creates a new commodity—the emissions allowance. Policymakers may decide to distribute the emissions allowances to covered entities at no cost (based on, for example, previous years' emissions), sell the allowances (e.g., through an auction), or use some combination of these strategies. The distribution of emissions allowances is typically a source of significant debate during a cap-and-trade program's development, because the allowances have monetary value.

In the EU ETS, electricity generators generally purchase emissions allowances through government auctions, but covered industrial facilities have received a portion of their allowances for free since 2005.[65] The rationale for this approach is generally the same as the rationale for a BCA: to address concerns of competitiveness with international firms that do not face comparable GHG mitigation and avoid emissions leakage.[66]

The CBAM is part of a larger reform package that amends other components of the EU ETS.[67] In particular, the reforms reduce the ETS emissions cap and gradually eliminate the allocation of free allowances. The CBAM will be phased in as free emissions allocation is phased out. Following the reporting period that started in October 2023, the CBAM starts in 2026 in a limited form, reaching full implementation in 2034, when the level of free allowances reaches zero.[68] During this phase-in period, the CBAM is scheduled to apply only to the percentage of emissions that do not benefit from free allowances.

The CBAM implementation requirements will change over time. The EU is still developing some of these requirements through a regulatory process. For example, during the reporting period, the EU Commission will screen CBAM reports and report issues to the relevant EU country. In 2026, an external independent body will need to verify the data provided by an importer.[69] During both the reporting and fee period, importers could be subject to penalties for false reporting of embodied emissions data.[70]

Products Covered

As EU policymakers worked to establish the CBAM, they debated which products would be subject to the border fee.[71] The enacted (May 2023) CBAM list of applicable imported goods includes

- cement materials,

[64] For more information, see the European Commission EU ETS website, https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets_en.

[65] For more background on the free allocation, see the European Commission, "Allocation to Industrial Installations," https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/free-allocation/allocation-industrial-installations_en#allocation-based-on-benchmarks.

[66] See, for example, European Commission, "Free Allocation," https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/free-allocation_en.

[67] For more information, see European Commission, "Carbon Border Adjustment Mechanism," https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en.

[68] EU 2023 CBAM regulations, Chapter IX.

[69] EU 2023 CBAM regulations, Article 8.

[70] EU 2023 CBAM regulations, Article 26.

[71] The European Commission's July 2021 proposed CBAM applied to a selected number of goods: iron and steel, cement, fertilizer, aluminum, and imported electricity. The European Parliament June 2022 proposal would have added organic chemicals, plastics, hydrogen, and ammonia to the scope of coverage.

- iron and steel products,
- aluminum products,
- fertilizers and related chemicals (e.g., ammonia),
- hydrogen, and
- electricity.[72]

The covered materials and products are listed in the EU regulations by their Combined Nomenclature ("CN") codes, the classification system the EU uses for trade and related purposes.

In addition, the regulations include a review process by which EU policymakers may consider whether to expand the scope of the covered goods listed above.[73]

The CBAM covers imports of goods from all non-EU countries. Countries that participate with the EU ETS or have their own emissions trading systems linked with the ETS (e.g., Switzerland) are excluded from the CBAM.[74] In addition, the CBAM includes an adjustment mechanism to account for a carbon price in place in the exporting country.[75]

The EU CBAM is expected to affect countries differently, depending in part on the value of their CBAM-eligible exports to the EU and the percentage of their CBAM-eligible exports relative to their total value of exports. **Figure 1** compares countries using these two measures.[76] As the figure indicates (in the left column), U.S. exports of CBAM-eligible materials to the EU accounted for approximately $1.3 billion in 2019. By comparison, Russian exports accounted for approximately $10 billion. The right column of the figure illustrates the percentage of CBAM-eligible exports compared to each country's total export value. For example, Mozambique's CBAM-eligible exports to the EU accounted for 17.5% of the total value of all of the country's exports. The United States is not listed in the right column of **Figure 1** because the U.S. CBAM-eligible exports to the EU accounted for 0.08% of total U.S. exports of goods in 2019 and would be too small to indicate on this figure.[77] According to U.S. Census data, the total value of U.S. exports (goods) to the EU was $1.65 trillion in 2019.[78]

[72] EU 2023 CBAM regulations, Annex I.

[73] EU 2023 CBAM regulations, Article 30.

[74] EU 2023 CBAM regulations, Article 2. These countries are listed in Annex III and include Iceland, Liechtenstein, Norway, and Switzerland.

[75] EU 2023 CBAM regulations, Article 9.

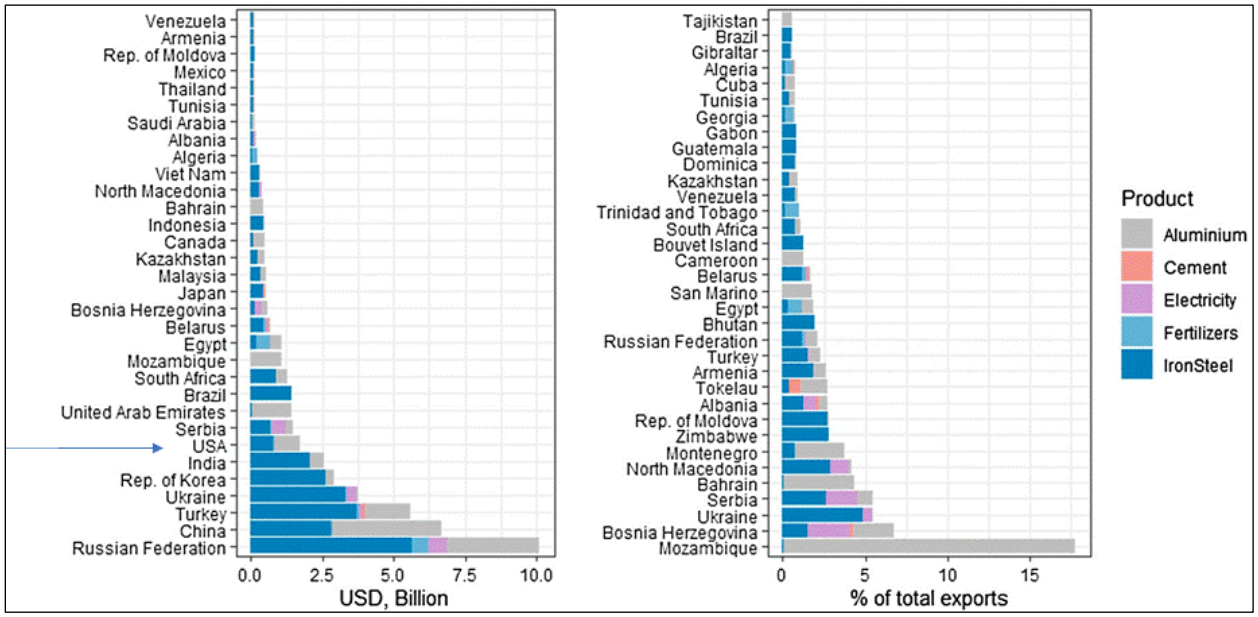
[76] The data in the figure are from Guilherme Magacho et al., "Impacts of the CBAM on EU Trade Partners: Consequences for Developing Countries," *Climate Policy* (2023).

[77] The figure's right column includes countries with CBAM-eligible exports to the EU that accounted for approximately 1% or more of their total value of all of the country's exports.

[78] Exports include both goods and services. The 0.08% calculation above includes only the value of exported goods. U.S. exports of services were valued at $876 billion in 2019. See U.S. Census, "U.S. International Trade in Goods and Services, Annual Revision," press release, June 2020, https://www.census.gov/foreign-trade/Press-Release/ft900_index.html.

Figure 1. Exports of EU CBAM-Eligible Products to EU Countries, by Country of Export

Left Column: Value of CBAM-Eligible Exports (U.S. Dollars)
Right Column: Percentage of CBAM-Eligible Exports Compared to Country's Total Export Value (2019 Data)



Source: Guilherme Magacho et al., "Impacts of the CBAM on EU Trade Partners: Consequences for Developing Countries," *Climate Policy* (2023).

Notes: "EU CBAM" means European Union Carbon Border Adjustment Mechanism. The United States is not listed in the right column because the U.S. CBAM-eligible exports to the EU accounted for 0.08% of total U.S. exports of goods in 2019. The figure's right column includes countries with CBAM-eligible exports to the EU that accounted for approximately 1% or more of their total value of all of the country's exports.

CBAM Carbon Price

The CBAM would attach its fee to imported goods through a certificate process. One certificate would equate to 1 metric ton of CO_2 emissions. Companies importing covered products into the EU would need to purchase certificates through national authorities. Once a year, importers would need to surrender the number of certificates that matched the emissions associated with their imported covered products. CBAM certificates would not be tradeable or bankable, but companies may sell a limited quantity of unused certificates back to a national authority.[79]

Should the CBAM import payment go into effect as planned in 2026, the certificate price (i.e., CBAM payment) would equal the most recent weekly average auction price for the EU ETS emissions allowance. If an auction were not held in a particular week, the CBAM certificate price would equal the closing price in the most recent emissions allowance auction.[80] The CBAM allows importers to reduce the number of certificates purchased (thus reducing the fee) if the country of origin imposed a "carbon price" before the covered product was exported. The EU CBAM regulations define a *carbon price* as a "monetary amount paid in a third country, under a carbon emissions reduction scheme, in the form of a tax, levy or fee or in the form of emission allowances under a greenhouse gas emissions trading system, calculated on greenhouse gases covered by such a measure, and released during the production of goods."[81]

[79] EU 2023 CBAM regulations, Chapter IV.

[80] EU 2023 CBAM regulations, Article 21.

[81] EU 2023 CBAM regulations, Article 3 (for definition of *carbon price*) and Article 6.

Figure 2 illustrates the EU ETS allowance prices between 2005 and 2023. The scope and stringency of the EU ETS has changed over time, and as the figure indicates, allowance prices began to increase in 2020. A number of factors likely played a role in the allowance price increases. For instance, in 2019, the EU established a mechanism called the market stability reserve, which reduced the supply of allowances in the market.[82] In 2021, the EU ETS entered a new phase (Phase 4), which included a reduction in the cap of the program, thus reducing the supply of emissions allowances.[83]

The figure also indicates that allowance prices fluctuated in 2022 and 2023, ranging from about $65 per $MTCO_2e$ to just over $100 $MTCO_2e$. The average price for the EU ETS emission allowances in 2023 was $90 per metric ton of CO_2e emissions. This value is considerably higher than 2023 emissions allowance prices in U.S. state and regional GHG emissions reduction programs. As a point of comparison, the average emissions allowance price in 2023 from the Regional Greenhouse Gas Initiative (RGGI) was $14 per metric ton.[84] The 2023 average allowance price in California's cap-and-trade program was $33 per metric ton.[85]

[82] For more information, see European Commission, "Market Stability Reserve," https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/market-stability-reserve_en.

[83] For more information, see European Parliament Research Service, "Review of the EU ETS: 'Fit for 55' Package," May 2023, https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2022)698890.

[84] RGGI is a cap-and-trade program involving a number of Northeast states. This is the average settlement price from the RGGI allowance auctions in 2023. See RGGI, "Elements of RGGI," https://www.rggi.org/program-overview-and-design/elements. For more background, see CRS Report R41836, *The Regional Greenhouse Gas Initiative: Background, Impacts, and Selected Issues*, by Jonathan L. Ramseur.

[85] California implements a GHG emissions cap-and-trade program that covers electric power, selected industries, and fossil fuel distributors. For more information, see California Air Resources Board, "Cap-and-Trade Program," https://ww2.arb.ca.gov/our-work/programs/cap-and-trade-program. The average allowance price is based on the auction settlement prices from 2023; see California Air Resources Board, "Cap-and-Trade Program Data Dashboard," https://ww2.arb.ca.gov/our-work/programs/cap-and-trade-program/program-data/cap-and-trade-program-data-dashboard.

Figure 2. European Union Emissions Trading System Emissions Allowance Prices

2005-2023 (not adjusted for inflation)

Source: Created by the Congressional Research Service with data from International Carbon Action Partnership (ICAP), Allowance Price Explorer, https://icapcarbonaction.com/en/documentation-allowance-price-explorer. ICAP sourced its data from the European Energy Exchange Group, https://www.eex.com/en/market-data/eex-group-datasource.

Direct or Indirect Emissions

During the development of CBAM, EU policymakers debated whether to include indirect emissions within the scope of the program.[86] The enacted CBAM requires importers to include information on both direct and indirect emissions during the transitional reporting phase (2023-2025). When the CBAM price goes into effect in 2026, importers must include indirect emissions for certain products subject to the CBAM.[87] These products initially include cement and fertilizer products.[88] Importers may need to account for indirect emissions in other CBAM products in later years, depending in part on the outcomes of the CBAM review process.[89]

[86] The European Commission's initial legislative proposal for CBAM (in July 2021) applied only to direct GHG emissions generated from the onsite production of covered materials (European Commission, "Carbon Border Adjustment Mechanism: Questions and Answers," https://ec.europa.eu/commission/presscorner/detail/en/qanda_21_3661). The European Parliament's CBAM proposal (from June 2022) included indirect emissions (EU Parliament, "CBAM: Parliament Pushes for Higher Ambition in New Carbon Leakage Instrument," press release, June 22, 2022, https://www.europarl.europa.eu/news/en/press-room/20220603IPR32157/cbam-parliament-pushes-for-higher-ambition-in-new-carbon-leakage-instrument).

[87] EU 2023 CBAM regulations, Article 7. Annex II of the regulations contains the list of imported goods that are not subject to the calculations of indirect emissions.

[88] For further information, see EU Commission, "Carbon Border Adjustment Mechanism (CBAM): Questions and Answers," updated February 2024, https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en#faq.

[89] The review process is scheduled to assess whether more products should account for indirect emissions. See EU 2023 CBAM regulations, Article 30.

World Trade Organization (WTO) Issues

The WTO is the 164-member international organization created to oversee and administer multilateral trade rules, serve as a forum for trade negotiations, and resolve trade disputes.[90] The WTO builds on the 1947 General Agreement on Tariffs and Trade (GATT) and its subsequent amendments.[91] The GATT is one of the WTO agreements that set forth broadly applicable rules that affect international trade in goods and services.[92]

As discussed above, policymakers can design BCAs in different ways. BCAs can vary by scope, stringency, and implementation. This section examines some of the issues BCAs may encounter within the WTO and the GATT. The relevance of the issues discussed below (and in the following section) to a particular BCA, such as the EU CBAM, will depend on that BCA's specific design parameters.

Notwithstanding the potential exceptions discussed below, it remains unsettled whether a BCA would be consistent with the GATT, including with respect to GATT provisions that prohibit countries from unjustifiably discriminating between "like" products for imported versus domestically produced products or among countries with most favored nation status.[93]

A key WTO issue is whether a country's BCA imposes a fee on imported products in excess of internal taxes on "like" domestic products. The GATT explicitly allows WTO members to impose "on the importation of any *product* ... a charge equivalent to an internal tax ... in respect of the like domestic product or in respect of an article from which the imported product has been manufactured or produced in whole or in part."[94] However, a country generally may not impose a BCA on imported products in excess of the internal tax imposed on "like" domestic products.[95]

Depending on the design and scope of a BCA, it may be difficult to determine if a BCA would be in excess of the tax or fee on "like" domestic products. For example, some U.S. legislative proposals from prior Congresses and the 118th Congress (see **Table 2** below) would levy an emissions fee or carbon tax only on fossil fuels.[96] The fee would be based on the GHG emissions generated when a consumer ultimately uses the fuel.[97] Under these proposals, although carbon-intensive materials such as steel, cement, and certain chemicals would not be directly subject to the proposed tax or fee, the fee on fossil fuels would have a disproportionate economic effect on these industries, as they are energy-intensive and trade-exposed industries (discussed above).

[90] See generally World Trade Organization, "The WTO," https://www.wto.org/english/thewto_e/thewto_e.htm (accessed July 10, 2024).

[91] Craig VanGrasstek, *The History and Future of the World Trade Organization* (Geneva: World Trade Organization, 2013), p. 45; CRS Report R45417, *World Trade Organization: Overview and Future Direction*, coordinated by Cathleen D. Cimino-Isaacs; WTO, General Agreement on Tariffs and Trade 1994, April 15, 1994 (hereinafter GATT).

[92] Texts of WTO agreements are available at World Trade Organization, WTO Legal Texts, https://www.wto.org/english/docs_e/legal_e/legal_e.htm (accessed July 29, 2024).

[93] GATT Articles II:2(a), III:2.

[94] GATT Article II:2(a) (emphasis added).

[95] Ibid; see also GATT Article III:2 (allowing import charges so long as they are equivalent to an internal tax). In addition, Article I of the GATT sets forth the agreement's most-favored-nation treatment obligation, which generally prohibits a WTO member from discriminating against imported products of one WTO member country as compared to products of another WTO member, including by taxing one WTO member's products in excess of another member's "like" products. This provision might be relevant if a BCA imposes a higher tax on the products of one WTO member as compared to another.

[96] See, for example, H.R. 5744 (118th Congress) and S. 685 and H.R. 2451 (117th Congress), among others. For more details, see CRS Report R45472, *Market-Based Greenhouse Gas Emission Reduction Legislation: 108th Through 117th Congresses*, by Jonathan L. Ramseur.

[97] See, for example, S. 685 and H.R. 2451 (117th Congress), among others. For more details, see CRS Report R45472, *Market-Based Greenhouse Gas Emission Reduction Legislation: 108th Through 117th Congresses*, by Jonathan L. Ramseur.

Even if a BCA were to treat imports differently than "like" domestic products or were otherwise viewed as imposing discriminatory treatment on imports, certain specific exceptions may apply, such as those for environmental protection or national security under GATT Articles XX and XXI. Those exceptions could allow a country to implement a BCA even if it were otherwise deemed inconsistent with principles such as nondiscrimination and most favored nation status, as reflected in key GATT provisions.[98] For example, the GATT environmental exceptions allow for discriminatory treatment if "necessary to protect human, animal or plant life or health" or related to the "conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption."[99] While a BCA might satisfy at least one of these criteria, a BCA measure would not be excepted if deemed "arbitrary or unjustifiable discrimination between countries where the same conditions prevail" or a "disguised restriction on international trade."[100] That is, any measure must not discriminate between countries on criteria other than carbon content. Alternatively, a country might invoke a national security exception if it determined that action to address climate change constituted a national security emergency.[101] Whether any BCA would satisfy any of these GATT exceptions and the associated conditions would likely be fact-dependent.[102]

While compliance with the GATT is the subject of much of the scholarly analysis on BCAs, it also remains unsettled whether a BCA could be challenged under other authorities, such as the Technical Barriers to Trade (TBT) Agreement.[103] TBTs are obstacles to trade imposed by standards, regulations, and procedures that countries use to determine compliance based on specific product characteristics.[104] The TBT Agreement has nondiscrimination requirements and imposes a common set of rules on how countries

[98] GATT Articles XX (a)–(j); XXI.

[99] GATT Article XX. For example, the WTO appellate body determined that a U.S. ban on shrimp imports harvested with nets that harmed sea turtles was related to the exhaustible conservation of natural resources (GATT Article XX(g)), and was not arbitrary or unjustifiable discrimination provided the United States had undertaken good-faith measures to negotiate an international agreement to protect sea turtles. See WTO, "Shrimp-Turtle (DS58) and Shrimp-Turtle (Article 21.5-Malaysia)," *WTO Dispute Settlement: One-Page Case Summaries*, 2021, https://www.wto.org/english/tratop_e/dispu_e/cases_e/1pagesum_e/ds58sum_e.pdf.

[100] GATT Article XX; see also WTO, "Shrimp-Turtle (DS58) and Shrimp-Turtle (Article 21.5-Malaysia)," *WTO Dispute Settlement: One-Page Case Summaries*, 2021, https://www.wto.org/english/tratop_e/dispu_e/cases_e/1pagesum_e/ds58sum_e.pdf (initially finding shrimp import bans to be unjustifiably discriminatory due to the "coercive" nature affecting foreign governments' policy decisions and "because of the rigidity and inflexibility in its application, and the lack of transparency and procedural fairness in the administration of trade regulations" but ultimately upholding the trade measure imposed so long as there was a good-faith effort to negotiate an international agreement and exempt certain countries based on specific criteria intended to increase flexibility and equity).

[101] GATT Article XXI. It is unclear whether a WTO panel would accept this rationale. Some WTO members have expressed concern that overuse of the national security exception would undermine the world trading system because countries might enact protectionist measures under the guise of national security. See, for example, WTO Council for Trade in Goods, "National Security Cited in Two Trade Concerns at Goods Council Meeting," June 30, 2017, https://www.wto.org/english/news_e/news17_e/good_10jul17_e.htm. However, the exception is not necessarily self-judging; see WTO, *Panel Report, Russia—Measures Concerning Traffic in Transit*, WTO Doc. WT/DS512/R, adopted April 26, 2019.

[102] See, for example, WTO Appellate Body Report, *United States—Import Prohibition of Certain Shrimp and Shrimp Products*, WT/DS58/AB/R, paras. 158-59, October 12, 1998. Some countries have asked for more details about whether the European Union's Carbon Border Adjustment Mechanism (CBAM) is WTO-compliant. See, for example, WTO Committee on Trade and Environment, "Report of the Meeting Held on 16 and 20 November 2020," WT/CTE/M/70, at Para 1.86, https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/CTE/M70.pdf&Open=True.

[103] Agreement on Technical Barriers to Trade, Marrakesh Agreement Establishing the World Trade Organization, April 15, 1994, 1867 U.N.T.S. 154 (hereinafter TBT Agreement), https://www.wto.org/english/docs_e/legal_e/17-tbt_e.htm; 19 U.S.C. § 2503. See also WTO TBT web portal, https://www.wto.org/english/tratop_e/tbt_e/tbt_e.htm (accessed June 18, 2024). U.S. Trade Representative, "Technical Barriers to Trade," https://ustr.gov/trade-agreements/wto-multilateral-affairs/wto-issues/technical-barriers-trade (accessed June 18, 2024) (noting free-trade agreements to which the United States is a party also have TBT provisions).

[104] See generally WTO, *Understanding the WTO: Standards and Safety*, https://www.wto.org/english/thewto_e/whatis_e/tif_e/agrm4_e.htm#TRS (accessed Sept. 27, 2024).

should administer such technical regulations and set standards for products.[105] The TBT Agreement specifies that "technical regulations shall not be more trade-restrictive than necessary to fulfil a legitimate objective."[106] Environmental protection is a legitimate objective under the terms of the TBT Agreement.[107] However, the measures taken must be the least trade-restrictive measure to achieve the objective.[108] Moreover, the TBT Agreement requires that members make use of international standards when available unless such standards would be ineffective in meeting the objective.[109] Policymakers considering a BCA therefore may consider whether alternative measures, particularly ones that make use of international standards, could accomplish the same climate-related objective with fewer restrictions. One way that Congress could document consideration of alternatives and the necessity of measures proposed is by including expert assessments of the proposed measures in the legislative record.

A dispute about a BCA's compliance with the GATT, the TBT Agreement, or other trade agreements under the WTO's purview would be resolved under the WTO's dispute settlement mechanism based on the WTO's rules and procedures.[110] Although the appellate body of the dispute settlement mechanism has not had a sitting member since 2020, the nonappellate dispute settlement body remains available to receive and assess complaints of violations of trade agreements brought by one WTO member against another.[111] The WTO BCAs have already been the subject of WTO discussions, [112] and countries have expressed concerns about whether the EU's CBAM complies with WTO rules.[113] Although some WTO members have expressed concerns about whether BCAs, including the EU's CBAM, would comply with the GATT, the TBT Agreement, or other trade agreements under the WTO's purview, no WTO dispute settlement panel has considered the question.

Although there is no dispute settlement panel or appellate report on the subject, one relatively comprehensive survey of the legal literature and the minutes of the WTO's Committee for Trade and Environment suggested that "a shared understanding supporting the idea that BCA[s] (especially BCA[s] on imports) would likely be WTO-compatible emerged over the years."[114] However, any challenge to BCA compatibility would likely be case-specific and is difficult to predict in the abstract. Further, even if

[105] TBT Agreement Article 2 (regulations), Article 4 (standards), Articles 5-6 (conformity assessments).

[106] Ibid. Article 2.

[107] Ibid. Other legitimate objectives include "national security requirements; the prevention of deceptive practices; protection of human health or safety, animal or plant life or health."

[108] See ibid. Article 2.2.

[109] Ibid. Article 2.4.

[110] WTO, *Understanding on Rules and Procedures Governing the Settlement of Disputes (DSU)*, https://www.wto.org/english/docs_e/legal_e/28-dsu.pdf. The WTO dispute settlement process can clarify the existing provisions of agreements in accordance with customary rules of interpretation of public international law, but it "cannot add to or diminish the rights and obligations provided in the covered agreements" (DSU Article 3.2).

[111] For more information on the WTO's dispute settlement mechanism and Appellate Body, see WTO, *Dispute Settlement*, https://www.wto.org/english/tratop_e/dispu_e/dispu_e.htm (accessed October 15, 2024); WTO, *Dispute Settlement—Appellate Body*, https://www.wto.org/english/tratop_e/dispu_e/appellate_body_e.htm (accessed October 15, 2024); see also CRS Report R46852, *The World Trade Organization's (WTO's) Appellate Body: Key Disputes and Controversies*, by Nina Hart and Brandon Murrill. Some countries—though not the United States—have also established their own Multi-Party Interim Appeal Arrangement (MPIA), which leaves open the possibility that the EU CBAM could potentially be considered in that context even if the WTO Appellate Body remains inoperative.

[112] See, for example, Committee on Trade and Environment meeting minutes from June 12, 2023, WT/CTE/M/78 (reporting multiple references to Europe's carbon border adjustment mechanism, including a request by China for multilateral discussions on border carbon adjustments), https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/CTE/M78.pdf.

[113] See, for example, Committee on Trade and Environment meeting minutes from June 12, 2023, WT/CTE/M/78 (reporting multiple references to Europe's carbon border adjustment mechanism, including a request by China for multilateral discussions on border carbon adjustments), https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/CTE/M78.pdf.

[114] Laurie Durel, "Border Carbon Adjustment Compliance and the WTO: the International Evolution of Law," *Journal of International Economic Law*, vol. 27, no. 1 (March 2024), pp. 28-29.

a WTO dispute settlement panel were to consider a BCA challenge, it would be unlikely to produce a final decision in the near term.[115]

A Related WTO Trade Dispute: Malaysian Palm Oil

Although BCAs have not been challenged to date under WTO dispute settlement procedures, other trade restrictions that distinguish among products based on the amount of climate emissions attributed to them have been formally challenged under the GATT and TBT Agreement. In 2024, Malaysia successfully challenged a component of EU rules restricting palm oil imports based on indirect land use changes, including with respect to their associated GHG emissions.[116] In that case, a WTO panel generally found that the EU had provided a "reasonable basis" for distinguishing between different products based in part on their risk of being associated with increased emissions, which on a conceptual level was a priori legitimate.[117] However, some of the technical aspects of how the EU accounted for and regulated embedded emissions in palm oil imports were deemed more trade-restrictive than necessary, unjustifiably discriminatory, and otherwise inconsistent with various provisions of the TBT Agreement.[118] With regard to the GATT, while the panel found that the regulations were discriminatory owing to differential treatment between producers, it concluded that those differences were also justified under the Article XX exceptions, as both related to the conservation of exhaustible natural resources and necessary to protect human, animal, or plant life.[119] It is unclear whether a BCA would face similar challenges.

Other Trade-Related Issues

The potential imposition of BCAs in general raises a range of trade issues and other related concerns. For example, some analysts have expressed concern that BCA-related tariffs could be (or be interpreted as) disguised protections for domestic industry.[120] That is, some have argued that countries could use subtle adjustments to the complex calculations often involved in the proposed BCAs to privilege domestic industries.[121] While some approaches, such as CBAM, can attempt to mitigate some of these concerns, such calculations are an inherent part of any BCA.

Similarly, experts have suggested that BCAs could negatively affect developing countries in the short run, particularly if they are applied broadly and uniformly without adjusting for more tailored equity and

[115] Under the WTO's Dispute Settlement Agreement, a panel report is adopted unless one of the parties notifies the Dispute Settlement Body (DSB) of its decision to appeal within 60 days of the report's issuance or the DSB decides by consensus not to adopt the report. See WTO, *Understanding on Rules and Procedures Governing the Settlement of Disputes*, WTO Agreement Annex 2, Article 16:4, https://www.wto.org/english/tratop_e/dispu_e/dsu_e.htm#16. While a party can decide to appeal consistent with Article 16:4, the appellate body cannot render a decision until reconstituted, thus effectively stalling the final report through a process sometimes referred to as "appealing into the void." See, for example, International Institute for Sustainable Development, "Ending the WTO Dispute Settlement Crisis: Where to from Here?" 2022, https://www.iisd.org/articles/united-states-must-propose-solutions-end-wto-dispute-settlement-crisis. For general information on the WTO dispute settlement process, see CRS In Focus IF10645, *Dispute Settlement in the WTO and U.S. Trade Agreements*, by Christopher A. Casey and Cathleen D. Cimino-Isaacs.

[116] WTO Dispute Settlement Body Report, *EU and Certain Member States—Palm Oil (Malaysia)*, adopted April 26, 2024, https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/DS/600R.pdf.

[117] Ibid at 183-184.

[118] Ibid. at 202 (inconsistency with TBT Article 2.1 due to underlying data, design, and implementation deficiencies resulting in arbitrary or unjustifiable discrimination), 219 (inconsistency with TBT Article 2.9 related to regulatory transparency and commenting), 237 (inconsistency with TBT Article 5.1 due certification procedures creating an unnecessary obstacle to trade), 245 (inconsistency with TBT Article 5.6 based on inadequate notice to foreign producers so as to enable compliance).

[119] Ibid. at 284.

[120] Peter Holmes et al., "Border Carbon Adjustments and the Potential for Protectionism," *Climate Policy*, vol. 11, no. 2 (2011); Gary Clyde Hufbauer, "Divergent Climate Change Policies Among Countries Could Spark a Trade War. The WTO Should Step In," Peterson Institution for International Economics, 2021, https://www.piie.com/blogs/trade-and-investment-policy-watch/divergent-climate-change-policies-among-countries-could.

[121] Ibid.; see also WTO Dispute Settlement Body Report, *EU and Certain Member States—Palm Oil (Malaysia)*, adopted April 26, 2024, https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/DS/600R.pdf.

climate considerations.[122] A survey conducted by the United Nations Conference on Trade and Development (UNCTAD) notes that the EU's CBAM, for example, "could impact the development of poorer countries and reduce their opportunities for export-led development."[123] However, the study also noted that the impact would be highly variable, and certain developing countries could gain advantages. For example, a 2020 study argued that because the steel industries of India and Turkey generally emit lower GHG emissions for a given output of steel compared to other countries' steel industries, India and Turkey would likely "take crude steel share from China, Russia, and the Ukraine" if the EU implemented a BCA-related tariff.[124]

Further, some researchers have highlighted the potential for unintended consequences from a BCA. For example, some studies have found that a border adjustment, like any tariff, may reduce demand for imported goods and thus for foreign currency, leading to an appreciation of domestic currency. As the domestic currency increases in value, exports become more expensive in foreign markets and may lead to lower net exports.[125] Some of the concerns may be lessened to some degree if a larger number of nations establish comparable emissions reduction policies.

Legislation in the 118th Congress

Members of Congress have introduced legislation that included market-based approaches (e.g., carbon taxes or fees, or cap-and-trade programs) with BCA provisions since 2007.[126] These proposals have varied considerably in their scope, stringency (e.g., emissions reductions requirements or tax level), and compliance options. In general, the main focus of the proposals from prior Congresses involved the domestic carbon price the legislation would have imposed on GHG emissions. In recent years, the main focus of comparable proposals has arguably shifted to placing a carbon price on imported materials.

BCA Proposals

Members in the 118th Congress have introduced several proposals that include BCA provisions, as well as other provisions:

- S. 3198, Foreign Pollution Fee Act of 2023, introduced by Senator Cassidy on November 2, 2023;
- S. 3422, Clean Competition Act, introduced by Senator Whitehouse on December 6, 2023;
- S. 5107, America's Clean Future Fund Act, introduced by Senator Durbin on September 19, 2024;
- H.R. 5744, Energy Innovation and Carbon Dividend Act of 2023, introduced by Representative Carbajal on September 27, 2023;

[122] See, for example, Elena Ianchovichina and Harun Onder, "Carbon Border Taxes: What Are Their Implications for Developing Countries?" Brookings Institution, 2021, https://www.brookings.edu/blog/future-development/2021/10/05/carbon-border-taxes-what-are-their-implications-for-developing-countries/.

[123] United Nations Conference on Trade and Development, *Impact of the COVID-19 Pandemic on Trade and Development: Transitioning to a New Normal* (Geneva: United Nations, 2021), p. 11.

[124] Ben Aylor et al., "How an EU Carbon Border Tax Could Jolt World Trade," Boston Consulting Group, June 30, 2020, https://www.bcg.com/publications/2020/how-an-eu-carbon-border-tax-could-jolt-world-trade.

[125] See, for example, Warwick McKibbin et al., "The Role of Border Carbon Adjustments in a U.S. Carbon Tax," *Climate Change Economics*, vol. 9, no. 1 (2018).

[126] A comparison of these provisions and proposals is included in CRS Report R45472, *Market-Based Greenhouse Gas Emission Reduction Legislation: 108th Through 117th Congresses*, by Jonathan L. Ramseur.

- H.R. 6665, Modernizing America with Rebuilding to Kickstart the Economy of the Twenty-first Century with a Historic Infrastructure-Centered Expansion Act (MARKET CHOICE Act), introduced by Representative Fitzpatrick on December 7, 2023;
- H.R. 6622, Clean Competition Act, introduced by Representative DelBene on December 8, 2023; and
- H.R. 8962, Methane Border Adjustment Mechanism Act, introduced by Representative Brownley on July 9, 2024.

Each of the proposals above (with the exception of H.R. 8962) would establish a BCA that applies to imported materials from specific industries, such as iron and steel. Although the lists of materials covered in the above bills are not identical, the lists have substantial overlap.

Table 1 lists the countries that account for the five largest sources of U.S. imports covered by industries that are subject to S. 3422 (based on 2022 data). **Table 1** uses the list of materials subject to S. 3422 as one case study. As the scope of the BCA proposals are relatively similar, the information in **Table 1** provides relevant context for each of the bills.[127]

The covered industries in S. 3422 are linked with North American Industry Classification System (NAICS) codes.[128] In 2022, imports of goods from all countries that fall under the NAICS codes included in S. 3422 were valued at approximately $449 billion.[129] As the table indicates, Canadian imports accounted for the largest source of imports—about 40% of the total—that would be subject to S. 3422. Imports of crude oil from Canada accounted for approximately 60% of the total value of Canadian imports subject to S. 3422 in 2022. Crude oil imports from Mexico accounted for about 50% of the total value of Mexican imports.

Table 1. Top Five Sources of U.S. Imports Covered by Industries Subject to S. 3422

(based on 2022 data)

Country	Value of Imports ($)
Canada	180,177,202,080
Mexico	35,470,505,874
Saudi Arabia	21,016,186,153
China	16,063,801,536
Brazil	15,332,842,832

Source: Prepared by CRS; data from U.S. Census Bureau, Imports for Consumption, 2022.

Notes: Based on NAICS codes in S. 3422 (as introduced): 211120 (petroleum extraction), 211130 (natural gas extraction), 322110 (pulp mills), 322130 (paperboard mills), 324110 (petroleum refining), 324121 (asphalt paving mixture and blocks), 324122 (asphalt shingle and coating materials), 324199 (all other petroleum and coal products), 325110 (petrochemicals), 325120 (industrial gas), 325193 (ethyl alcohol), 325199 (other basic organic chemicals), 325311 (nitrogenous fertilizers), 327211 (glass), 327212 (glass), 327213 (glass), 327215 (glass), 327310 (cement), 327410 (lime and gypsum), 327420 (lime and gypsum), 331110 (iron and steel), 331313 (aluminum), and 331314 (aluminum). Note that

[127] With the exception of H.R. 8962, which applies only to imports of petroleum and natural gas.

[128] According to the U.S. Census Bureau, the North American Industry Classification System (NAICS) "is the standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy" (https://www.census.gov/naics/).

[129] Calculated by CRS by converting the North American Industry Classification System (NAICS) codes listed in S. 3422 to Harmonized Tariff Schedule (HTS), using the U.S. International Trade Commission's Dataweb. See U.S. Census Bureau, "Imports for Consumption," 2022, https://www.census.gov/foreign-trade/index.html.

NAICS 212114 (surface coal mining), 212115 (underground coal mining), and 322120 (paper mills) do not have a NAICS-to-HTS conversion and were not included in the above data.

Table 2 below provides a comparison of selected provisions in the above-listed proposals, and **Table 3** includes comparable provisions from the EU CBAM. As with other market-based approaches, the above proposals vary in their design, scope, and stringency. One key difference among the bills is whether and how they would implement a domestic price on GHG emissions (e.g., tax or fee). For example, S. 5107, H.R. 5744, and H.R. 6665 would impose a domestic tax on GHG emissions from selected sources. S. 3422 and H.R. 6622 (identical bills) would impose a domestic emissions charge at certain facilities, based on a facility's GHG emissions intensity as compared to the emissions intensity for the relevant industry. By comparison, S. 3422 explicitly states that it would not impose a new carbon fee or charge on domestic entities. H.R. 8962 would not impose a new fee on emissions, but it would base its BCA on the domestic methane emissions charge established in the Inflation Reduction Act of 2022.[130]

Most of the proposals above would apply a fee to a list of specific imported materials. H.R. 8962 applies only to imported petroleum and natural gas.

The PROVE IT Act of 2024

In addition to the legislative proposals listed above, a related proposal from the 118th Congress—the PROVE IT Act of 2024—would address issues and challenges involved in the implementation of a BCA framework. S. 1863 (Providing Reliable, Objective, Verifiable Emissions Intensity and Transparency Act of 2023; PROVE IT Act of 2024) was introduced on June 7, 2023. The Senate Committee on Environment and Public Works reported the bill (now titled the PROVE IT Act of 2024) with an amendment in the nature of a substitute on January 25, 2024.

Although the proposal does not itself establish a BCA framework, its provisions would potentially support a future BCA framework. In particular, the PROVE IT Act of 2024 would support a BCA framework that uses differences in GHG emissions intensities to determine both domestic fees and import fees. As discussed above (and identified in **Table 2** below), several of the proposals in the 118th Congress employ this approach.

As discussed above, a central challenge with BCA implementation concerns the availability, quality, and authoritativeness of the underlying data needed to assess import fees. Several of the legislative BCA proposals compared below (in **Table 2**) would base their import fees on differences between the GHG emissions intensity of a particular good (e.g., steel) produced in the United States and the intensity of the same good produced in a foreign country. The GHG emissions intensity for a commercial product is generally understood to be a measure of GHG emissions associated with the production of a unit of value or amount of the material.

Policymakers and stakeholders have cited recent analyses to support the argument that certain U.S. industries are less GHG-emissions-intensive than some of their counterparts in other countries.[131] According to the PROVE IT Act of 2024 sponsors, the bill would seek to "obtain high-quality data to

[130] For more information, see CRS Report R47206, *Inflation Reduction Act Methane Emissions Charge: In Brief*, by Jonathan L. Ramseur.

[131] See, for example, Sachin Nimbalkar, *Potential Decarbonization Strategies and Challenges for the U.S. Iron and Steel Industry*, Department of Energy, Oak Ridge National Laboratory, 2022, https://www.energy.gov/sites/default/files/2022-02/Nimbalkar%20-%20ORNL%20-%20Decarbonizing%20US%20Steel%20Industry.pdf. The Department of Energy document cites A. Hasanbeigi and C. Springer, *How Clean Is the U.S. Steel Industry? An International Benchmarking of Energy and CO_2 Intensities*, Global Efficiency Intelligence, 2019; Catrina Rorke and Greg Bertelsen, *America's Carbon Advantage*, Climate Leadership Council, 2020, https://clcouncil.org/report/americas-carbon-advantage/.

back up" these claims.[132] These data could be used to support the proposals (identified above) that rely on GHG emissions intensity differences to set their fees.

To meet these objectives, the PROVE IT Act of 2024 would direct the Department of Energy (in coordination with a number of other agencies) to, among other things,

- determine the GHG emissions intensities of specific products produced in the United States and identify data gaps;[133]
- determine the GHG emissions intensities ("with reasonable accuracy") of specific products made in applicable countries,[134] and identify data gaps;[135]
- determine relative differences in GHG emissions intensities for specific products from the United States and the selected countries; and
- submit a report to Congress two years after enactment and every five years thereafter.

The bill would prioritize certain products for the agencies to assess first, such as those that would be subject to the EU CBAM. In addition, the bill includes a clarification, explicitly stating that the bill would not impose a new carbon fee or charge or establish a new mandatory reporting program for the covered products.

[132] See, for example, Office of Sen. Chris Coons, "Senators Coons, Cramer Introduce Legislation to Study Global Emissions Intensity and Hold Countries with Dirty Production Accountable," press release, August 9, 2023, https://www.coons.senate.gov/news/press-releases/senators-coons-cramer-introduce-legislation-to-study-global-emissions-intensity-and-hold-countries-with-dirty-production-accountable.

[133] The list of specific products generally mirrors the list of covered products in S. 3198.

[134] Covered countries include several categories: members of the Group of Seven; countries that are signatories to free-trade agreements with the United States; "foreign countries of concern" (as defined in 15 U.S.C. §4651), which includes the Democratic People's Republic of North Korea, the People's Republic of China, the Russian Federation, and the Islamic Republic of Iran; and countries that hold more than a de minimis share of the global market of a particular product (as determined by the Department of the Treasury).

[135] The proposal instructs the Department of Energy to incorporate findings from similar activities conducted pursuant to Section 40416(a) of the Infrastructure Investment and Jobs Act. In addition, the bill instructs the department to use other existing data sources, such as the Environmental Protection Agency's (EPA's) Greenhouse Gas Reporting Program.

Table 2. Comparison of Selected Provisions in Border Carbon Adjustment (BCA) Proposals from the 118th Congress

Bill Number Congress Title Sponsor Date	General Framework	Scope of Materials	BCA Mechanism	Exemptions from BCA	Distribution of BCA Revenue
S. 3198 Foreign Pollution Fee Act of 2023 Sen. Cassidy Nov. 2, 2023	The bill would establish a BCA framework for specific products based on the difference between the GHG emissions intensity of the imported product and the GHG emissions intensity of similar products in the United States. Department of the Treasury (Treasury) would be directed to make necessary determinations through the rulemaking process. The bill explicitly states that it would not impose a new carbon fee or charge on domestic entities. The bill would encourage international partnerships to reduce or eliminate the import fee. The bill would create a new Advisory Board, composed of directors of the National Laboratories, federal agencies, and industry, to help with implementation details.	Covered products would include materials listed in the Harmonized Tariff Schedule (HTS) with six-digit subheadings in the following categories: • aluminum; • biofuels; • cement; • crude oil; • glass; • hydrogen, methanol, or ammonia; • iron and steel; • lithium-ion batteries; • selected minerals; • natural gas; • petrochemicals; • plastics; • pulp and paper; • refined petroleum products; • solar cells and panels; and • wind turbines. The bill would include a process of allocating intensity from crude oil and minerals to "resulting products." The bill would include a petition process to add covered products.	Importers would be required to pay a fee at time of importation based on a measure of the amount of the covered product multiplied by the "variable charge"; the variable charge is an "ad valorem fee"[b] that would be based on the GHG intensity difference[c] between the covered product and the GHG intensity of the same type of product in the United States (referred to as the "baseline" GHG intensity). Products with greater intensity differences would have higher fees.[d] The fee would change over time, using a tiered system (i.e., different charges for different magnitudes of intensity differences) that seeks to incrementally reduce the average intensity difference specific to each covered product. These intensity reduction goals would be implemented in several phases; variable charges would be established to meet the goals, while "minimizing any potential increase in domestic costs." Treasury would be able to adjust the charge if it determines that a country is attempting to "circumvent" the	The import fee for a covered product would be zero under certain conditions: (1) The covered product (A) comes from a country that has formed an international partnership meeting the conditions of the bill; and (B) the product's intensity difference is less than 50%; these agreements must provide for a comparable system of reduction in GHG emissions intensity, among other things; agreements can apply to one or multiple products and involve one or more countries. (2) The GHG intensity difference between the imported product and similar U.S. products is less than or equal to 10%. (3) Treasury determines a covered product does not have "sufficient domestic production" (as defined in the bill). (4) Treasury determines a covered product fulfills a contract with Department of Defense (or a Department of Defense contractor). (5) A covered product comes from a country with a	The bill does not include specific provisions for BCA revenue distribution.

Bill Number Congress Title Sponsor Date	General Framework	Scope of Materials	BCA Mechanism	Exemptions from BCA	Distribution of BCA Revenue
			fee (e.g., through price decreases or subsidies). The bill would create a National Laboratory Advisory Board on Global Pollution Challenges to work with Treasury to develop GHG intensity values specific to covered products (generally to six-digit HTS subheadings) by country of origin. Values would include both point source and "upstream" GHG emissions (as defined in the bill). The bill would authorize the use of certain sources of data, give preference to EPA's data from its GHG reporting program, and allow EPA to alter this program to collect information that would support the bill. The bill would provide specific methodologies for calculating intensity values, including treatment of recycled materials, carbon capture, products with multiple parts (including de minimis amounts), products from facilities subject to certain agreements, and foreign ownership. Treasury would be required to increase the GHG intensity value for covered products by 20% under certain conditions, which generally involve the robustness of the foreign data.	congressionally approved "free trade agreement," if all of the product parts are made in that country and the intensity difference is less than 50%.	

Bill Number Congress Title Sponsor Date	General Framework	Scope of Materials	BCA Mechanism	Exemptions from BCA	Distribution of BCA Revenue
			Treasury would be able to adjust specific intensity values based on input from countries under certain conditions, which generally involve data quality. The U.S. Trade Representative would be able to form an agreement (under certain conditions) with a facility in a foreign country to set a GHG intensity value specific to that facility.		
S. 3422 Clean Competition Act Sen. Whitehouse Dec. 6, 2023	The bill would impose a domestic emissions charge at certain facilities, based on an annual carbon price and the degree to which a facility's carbon intensity exceeds the intensity of the relevant industrial sector. The charge would increase over time, based on the degree of intensity exceedance. The Department of the Treasury (Treasury) would determine the carbon intensity for covered industries; covered entities would be allowed to petition for a different carbon intensity of a specific good. Treasury would be required to establish a reporting program for facilities to provide data for calculating their carbon intensity (e.g., process emissions, electricity use,	The domestic charge would apply to facilities that are required to report GHG emissions to the Environmental Protection Agency (EPA) GHG Reporting Program (40 C.F.R. Part 98) and produce primary goods in covered national industries (as defined in the bill), including • petroleum and natural gas extraction; • surface coal mining; • underground coal mining; • iron and steel; • aluminum; • chemical manufacturing; • pulp and paper; • paperboard mills; • petroleum refineries; • asphalt; • glass; • hydrogen production; • adipic acid production; • ethyl alcohol;	Imports of carbon-intensive goods (and finished goods) would be subject to a charge based on the domestic carbon price and the difference in carbon intensities between the imported good and the carbon intensity of the relevant U.S. industrial sector. Carbon intensity would be a measure of "covered emissions" from a facility divided by total weight of primary goods produced at the facility. The default measure of carbon intensity for imported goods would be the exporting country's gross domestic product divided by total production-based emissions. Treasury would be required to determine the intensity measure for the relevant industrial sector in the exporting country (emissions	Primary goods produced in a "relatively least developed country" would be excluded from the import charge (unless the country produces a primary good that accounts for at least 3% of total global exports by value).[a] The import charge would be waived or reduced if Treasury determines (with coordination with other agencies) the exporting country imposes "explicit costs" on GHG emissions that are materially similar to the domestic charge. U.S. facilities that export covered materials (and finished goods) would be able to seek refund based on payment of the domestic charge.	The bill would generate revenues from a charge on domestic facilities and imported goods; the bill would effectively combine the two revenue streams and distribute them as follows: The bill would allocate 75% of these emissions charge revenues to Treasury to establish and implement a competitive grant program to eligible entities for investments in technology that reduce their carbon intensity; and allocate 25% of the total revenues to the Department of State for multilateral assistance to support climate and clean energy programs.

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	weight of primary goods produced). The domestic carbon price would start at $55, increasing annually by 5% plus inflation. The bill would create a BCA framework that imposes a charge on certain imported goods based on the domestic carbon price and the carbon intensity differences between imported materials and their U.S. counterparts.	• nitrogenous fertilizers; and • petrochemicals. The import charge would apply to primary goods imported into the United States from the same industries listed above.	divided by total weight of product in that sector). An importer would be able to submit a petition supporting a carbon intensity specific to a particular manufacturer in the exporting country.		
S. 5107 America's Clean Future Fund Act Sen. Durbin September 19, 2024	The bill would impose a fee on fossil fuels and selected GHG emissions sources. The fee on fossil fuels would start in 2026 at $65/mt$CO_2$e, increasing annually by $10 plus inflation; if specified emission targets are not met, the fee increases would be greater. The fee on other sources would start in 2028. The bill would provide a rebate for carbon capture, sequestration, and utilization activities, if certain conditions were met. The bill would create a BCA that imposes a fee on carbon-intensive products and provide a rebate for exporters of fossil fuels and carbon-intensive products.	The fee would apply to coal at coal mines and importers, crude oil at refineries and importers, and natural gas at producing wells and importers. The fee would also apply to sources in the "energy and industrial sectors" that emit 25,000 mtCO_2e or more of CO_2 or methane per year.	Imports of carbon-intensive products would be subject to a fee (determined by Treasury) that is equivalent to the difference in (1) costs domestic producers of comparable products incur due to the fee and (2) the comparable costs imposed by the exporting nation. The bill defines carbon-intensive products to include • iron, steel, and steel mill products; • aluminum; • cement; • glass; • pulp and paper; • chemicals; and • industrial ceramics. Treasury would be able to add more products to the above list.	The bill does not include specific provisions for exemptions from the fee.	Th bill would establish a trust fund that receives appropriations equal to fees received in the Treasury from the domestic fees and import fees. The trust fund would allocate expenditures during the first 10 years as follows: 70% for direct payments to eligible individuals, phasing out at certain income levels; 5% for agricultural and forestry sequestration; 10% for grants to support transition assistance to a lower carbon economy; 15% for a newly established Climate Change Finance Corporation to finance "clean energy" and climate change resiliency activities.

Bill Number Congress Title Sponsor Date	General Framework	Scope of Materials	BCA Mechanism	Exemptions from BCA	Distribution of BCA Revenue
H.R. 5744 Energy Innovation and Carbon Dividend Act of 2023 Representative Carbajal September 27, 2023	The bill would impose a domestic fee on fossil fuels used, sold, or transferred at "covered entities," which include coal mines, petroleum refineries, and specific natural gas distribution entities. The fee would be based on the fuel's GHG emissions content. The rate of the fee would start at $15 per $mtCO_2e$[e] and increase annually by inflation plus $10/$mtCO_2e$. The fee would increase by $15/$mtCO_2e$ if certain emissions targets are not met and cease if total GHG emissions from fossil fuels decrease by 90% compared to 2005 levels. The bill would provide a rebate for fuels used on a farm and for fuels or their derivatives used by U.S. Armed Forces; and provide a rebate for specific carbon capture and sequestration activities. The bill would also establish a BCA on imported fossil fuels and carbon-intensive products.	The domestic fee would apply to fossil fuels. The import fee would apply to fossil fuels and carbon-intensive products. The initial list of such products includes • iron and steel; • aluminum; • cement; • glass; • pulp and paper; • chemicals; and • industrial ceramics. The bill would direct Treasury (in consultation with EPA) to add more products through a regulatory process.	The BCA would impose a fee on imported fossil fuels that would equate to the domestic fee on fossil fuels. The BCA would impose a fee on imported carbon-intensive products "equal to the total carbon fee which would have accumulated upon the [GHG] content of the imported carbon-intensive product had the imported carbon-intensive product been produced domestically and subject to the domestic carbon fee."[f] Treasury would determine whether to reduce a fee on imported materials (fuels or products) based on explicit GHG emissions prices imposed in the exporting country. The BCA would provide a credit or refund to exporters of covered fuels, based on the tax levied on the fuels. The BCA would also allow a credit or refund to exporters of carbon-intensive products, equal to the "total carbon fees accumulated upon the [GHG] content of the exported carbon-intensive product."[f]	The bill does not include specific provisions for exemptions from the fee.	The bill states that revenues collected from the domestic fee and BCA fee "may be used to supplement appropriations" to the U.S. Customs and Border Protection for BCA administration; and "then" to the Green Climate Fund.[g]
H.R. 6665 MARKET CHOICE Act Representative Fitzpatrick	The bill would impose a tax on fossil fuels based on their potential GHG emissions, GHG emissions from specific industrial sources, and GHG	The domestic tax would apply to fossil fuels and GHG emissions from facilities—in specific industrial source categories—that emit more	The bill would impose a tax on imports on covered goods, as determined by Treasury. The tax would be equivalent to the costs (associated with the	The BCA would exclude least developed countries (as identified by the United Nations); and countries responsible for (1) less than	The bill would establish a trust fund that receives appropriations equal to 75% of the bill's tax revenue, including both the domestic

Bill Number Congress Title Sponsor Date	General Framework	Scope of Materials	BCA Mechanism	Exemptions from BCA	Distribution of BCA Revenue
December 7, 2023	emissions from specific products. The domestic tax rate would start (in 2025) at $35 per $mtCO_2e$, increasing annually by 5% plus inflation; if covered emissions do not meet emissions reduction schedule, the tax rate would increase by an additional $4 per $mtCO_2e$. The bill would also establish a BCA on imported covered goods and a rebate for exporters of covered goods. The bill would repeal specific existing taxes on fuels, including gasoline and aviation fuel.	than 25,000 $mtCO_2e$ per year, including • iron and steel; • underground coal mining; • coal processing; • petroleum refineries; • cement; • petrochemicals; • lime; • ammonia; • aluminum; • soda ash; • ferroalloy; • phosphoric acid; • glass; • zinc; • petroleum and natural gas extraction; • lead; • magnesium; • nitric acid; • adipic acid; • semiconductor manufacture; and • electrical transmission and distribution. The domestic tax would also apply to facilities that manufacture or import specified products or combust biomass with emissions above 25,000 $mtCO_2e$.	domestic tax) on comparable domestic manufactured goods. Covered goods would include those that meet specific GHG emissions intensity and trade intensity thresholds (as determined by Treasury). The bill would authorize the use of certain sources of data, and, in certain situations, authorize Treasury to use the "best available data" and "economic and engineering models" to make specific determinations. The bill would provide a rebate to exporters of goods that are both energy-intensive and trade-intensive; the rebate would be related to the increased costs of inputs (i.e., fossil fuels) subject to the domestic tax.	0.5% of total global GHG emissions and (2) less than 5% of global production in a covered industrial sector. The BCA would authorize the President to exclude sectors and materials if the President determines the application "would not be in the national interest, economic interest, or environmental interest of the United States."	tax and the BCA tax revenue. The bill does not provide a specific allocation for the remaining 25% of revenue. "As provided in appropriations acts," the trust fund would be available to provide annual funding for the following infrastructure programs between FY2025 and FY2034: • 70% to the Federal Highway Trust Fund; • 10% to states for grants to low-income households; • 4.2% for various energy-related research and development objectives; • 4.0% for mitigation and adaptation infrastructure projects; • 3.0% for displaced energy workers; • 2.5% for the Airport and Airway Trust Fund; • 1.5% for a Department of Energy weatherization program; • 1.5% for the Abandoned Mine Reclamation Fund; • 1.0% for the Reforestation Trust Fund;

Bill Number Congress Title Sponsor Date	General Framework	Scope of Materials	BCA Mechanism	Exemptions from BCA	Distribution of BCA Revenue
					• 0.5% to support agricultural GHG sequestration projects; • 0.1% to decrease the environmental impact of renewable energy activities; and • 0.1% for the Leaking Underground Storage Tank Trust Fund.
H.R. 6622 Clean Competition Act Representative DelBene December 8, 2023 *This proposal is identical to S. 3422 (Whitehouse)*	The bill would impose a domestic emissions charge at certain facilities, based on an annual carbon price and the degree to which a facility's carbon intensity exceeds the intensity of the relevant industrial sector. The charge would increase over time, based on the degree of intensity exceedance. Treasury would determine the carbon intensity for covered industries; covered entities would be allowed to petition for a different carbon intensity of a specific good. Treasury would be required to establish a reporting program for facilities to provide data for calculating their carbon intensity (e.g., process emissions, electricity use, weight of primary goods produced). The domestic carbon price would start at $55, increasing annually by 5% plus inflation.	The domestic charge would apply to facilities that are required to report GHG emissions to the EPA's GHG Reporting Program (40 C.F.R. Part 98) and produce primary goods in covered national industries (as defined in the bill), including • petroleum and natural gas extraction; • surface coal mining; • underground coal mining; • iron and steel; • aluminum; • chemical manufacturing; • pulp and paper; • paperboard mills; • petroleum refineries; • asphalt; • glass; • hydrogen production; • adipic acid production; • ethyl alcohol; • nitrogenous fertilizers; and • petrochemicals.	Imports of carbon-intensive goods (and finished goods) would be subject to a charge based on the domestic carbon price and the difference in carbon intensities between the imported good and the carbon intensity of the relevant U.S. industrial sector. Carbon intensity would be a measure of "covered emissions" from a facility divided by total weight of primary goods produced at the facility. The default measure of carbon intensity for imported goods would be the exporting country's gross domestic product divided by total production-based emissions. Treasury would be required to determine the intensity measure for the relevant industrial sector in the exporting country (emissions divided by total weight of product in that sector).	Primary goods produced in a "relatively least developed country" would be excluded from the import charge (unless the country produces a primary good that accounts for at least 3% of total global exports by value).[a] The import charge would be waived or reduced if Treasury determines (with coordination with other agencies) the exporting country imposes "explicit costs" on GHG emissions that are materially similar to the domestic charge. U.S. facilities that export covered materials (and finished goods) would be able to seek a refund based on payment of the domestic charge.	The bill would generate revenues from a charge on domestic facilities and imported goods; the bill would effectively combine the two revenue streams and distribute them as follows: The bill would allocate 75% of these emissions charge revenues to Treasury to establish and implement a competitive grant program to eligible entities for investments in technology that reduce their carbon intensity; authorize Treasury to "recapture" grant funds under certain conditions; and allocate 25% of the total revenues to the Department of State for multilateral assistance to support climate and clean energy programs.

Bill Number Congress Title Sponsor Date	General Framework	Scope of Materials	BCA Mechanism	Exemptions from BCA	Distribution of BCA Revenue
	The bill would create a BCA framework that imposes a charge on certain imported goods based on the domestic carbon price and the carbon intensity differences between imported materials and their U.S. counterparts.	The import charge would apply to primary goods imported into the United States from the same industries listed above.	An importer would be able to submit a petition supporting a carbon intensity specific to a particular manufacturer in the exporting country.		
H.R. 8962[h] Methane Border Adjustment Mechanism Act Representative Brownley July 9, 2024	The bill would create a BCA framework that imposes a tax on imported petroleum and natural gas. The tax would be based on the domestic methane emissions charge established in Section 136 of the Clean Air Act by the Inflation Reduction Act of 2022.	The tax would apply to imported petroleum and natural gas.	The tax would be based on a country's *total methane emissions charge*. This term is defined as the total amount of charges from facilities in another country, if they were subject to the Clean Air Act Section 136 charge on methane emissions from specific facilities in the oil and gas industry.[i] The amount of tax would be based on the ratio—as determined by Treasury—of the volume or energy content of the imported substance to the total volume or energy content of that substance that is produced in its origin country. The bill would provide an alternative mechanism, subject to certain conditions, for assessing the tax on imported materials.	The bill does not include specific provisions for exemptions from the tax.	The bill does not include specific provisions for BCA revenue distribution.

Source: Prepared by CRS.

a. S. 3422 cross-references the definition of *relatively least developed country* in Section 124 of the Foreign Assistance Act of 1961 (22 U.S.C. §2151v), which references the list of *least developed country* from the United Nations General Assembly. This list is available at United Nations, "List of LDCs," https://www.un.org/ohrlls/content/list-ldcs.

b. The World Trade Organization defines an *ad valorem tariff* as a "tariff rate expressed as a percentage of the value of the goods to be imported or exported." See World Trade Organization, *Dictionary of Policy Terms*, Fifth Edition, 2007.

c. The bill uses the term *pollution* throughout its text, including the key terms *pollution intensity* and *pollution intensity difference*. The bill defines *pollution* as "greenhouse gas emissions." To avoid confusion and allow for easier comparisons among the BCA proposals, CRS substitutes GHG emissions for *pollution* in the above table's entry for this bill.

d. The bill does not explicitly address situations in which an imported material's GHG emissions intensity is lower than its counterpart in the United States.

e. This term of measure is used because GHGs vary by global warming potential (GWP). GWP is an index developed by the Intergovernmental Panel on Climate Change (IPCC) that allows comparisons of the heat-trapping ability of different gases over a period of time, typically 100 years. Consistent with international GHG reporting requirements, EPA's most recent GHG inventory (with data from 2022) uses the GWP values presented in the IPCC's 2013 *Fifth Assessment Report*. For example, based on these GWP values, a ton of methane is 28 times more potent than a ton of CO_2 when averaged over a 100-year time frame. EPA's inventory is available at EPA, "Inventory of U.S. Greenhouse Gas Emissions and Sinks," https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks.

f. The implementation of this provision is uncertain, as carbon-intensive products are not directly subject to a domestic fee. The bill would direct Treasury (in consultation with EPA) to implement the BCA.

g. For more information on the Green Climate Fund, see CRS In Focus IF10763, *U.S. International Climate Finance: A Primer*, by Richard K. Lattanzio.

h. As of the date of this report, the official text of this proposal was not available at Congress.gov. CRS obtained the text of this bill from Representative Brownley's website, "Brownley Introduces Legislation to Reduce Global Methane Emissions," press release, July 9, 2024, https://juliabrownley.house.gov/brownley-introduces-legislation-to-reduce-global-methane-emissions/.

i. The 2022 Inflation Reduction Act (IRA; P.L. 117-169) added Section 136 to the Clean Air Act (42 U.S.C. §7436). The emissions charge in Section 136 applies only to methane emissions from specific types of facilities that are required to report their GHG emissions to the EPA's Greenhouse Gas Emissions Reporting Program (GHGRP). For more information, see CRS Report R47206, *Inflation Reduction Act Methane Emissions Charge: In Brief*, by Jonathan L. Ramseur.

Table 3. Selected Provisions in the European Union Carbon Border Adjustment Mechanism (CBAM)

Effective Date	General Framework	Scope of Materials	BCA Mechanism	Exemptions from BCA	Distribution of BCA Revenue
The first phase of the CBAM—which requires reporting but does not impose a fee—went into effect on October 1, 2023. During the second phase—scheduled to start in 2026—the EU will impose a fee on selected imports.	CBAM requires importers to submit payments (beginning in 2026) for the GHG emissions associated with their covered imported materials. CBAM complements the EU's principal GHG mitigation policy mechanism: the Emissions Trading System (ETS). The ETS is a GHG emissions cap-and-trade program that started in 2005 and covers emissions from the electricity sector,	CBAM regulations identify applicable covered materials by their Combined Nomenclature codes (the EU's trade classification system), including • cement materials; • iron and steel products; • aluminum products; • fertilizers and related chemicals (e.g., ammonia); • hydrogen; and • electricity.	CBAM indirectly attaches a carbon price to the GHG emissions "embedded" with imported products. The carbon price equals the weekly average auction price for the EU ETS emissions allowance; the average price in 2023 was $90 per metric ton of CO_2e emissions.[a] CBAM attaches the price to imported goods through a certificate process. One	CBAM covers imports of goods from all non-EU countries. Countries that participate with the EU ETS or have their own emissions trading systems linked with the ETS (e.g., Switzerland) are excluded from the CBAM. CBAM includes a de minimis exemption, which generally applies to covered materials	EU countries retain 25% of the CBAM revenues; the remaining 75% go into the EU budget.[d]

Effective Date	General Framework	Scope of Materials	BCA Mechanism	Exemptions from BCA	Distribution of BCA Revenue
	selected energy-intensive industries, and aviation.	CBAM regulations include a process by which EU policymakers may expand the list above.	certificate equates with 1 metric ton of CO_2e emissions. Companies importing covered products into the EU need to purchase certificates through national authorities and annually surrender the number of certificates that matches the emissions associated with their imported products. CBAM is scheduled to phase in over a number of years; following a reporting period that started in October 2023, the CBAM fee is scheduled to start in 2026 in a limited form and reach its full implementation in 2034. During the first period, both direct and indirect emissions must be reported; after the reporting period, the scope varies by product.[b] During this phase-in period (2026-2034), the CBAM is scheduled to apply only to the percentage of emissions that do not benefit from free allowances. CBAM includes an adjustment mechanism to account for a carbon price in place in the exporting country.	with a total value of €150 or less.[c]	

Source: Prepared by CRS.

a. This value is higher than 2023 emissions allowance prices in U.S. state and regional GHG emissions reduction programs. As a point of comparison, the average emissions allowance price in 2023 from the Regional Greenhouse Gas Initiative (RGGI) was $14 per metric ton. The 2023 average allowance price in California's cap-and-trade program was $33 per metric ton.

b. In general, direct emissions include emissions from an onsite process, such as CO_2 from cement or steel production. Indirect emissions include (for example) emissions from the inputs, such as electricity generated offsite but used to run an onsite process.

c. European Commission, "Carbon Border Adjustment Mechanism (CBAM) Questions and Answers," updated November 28, 2023, https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en#guidance.

d. European Commission, "Questions and Answers: An Adjusted Package for the Next Generation of Own Resources," June 2023, https://ec.europa.eu/commission/presscorner/detail/en/qanda_23_3329. Further details are beyond the scope of this report.

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