

Border Carbon Adjustments: Impact and Relevance for Developing Countries

Part A: Carbon Leakage and Ways to Address It

Part B: Border Carbon Adjustment Measures

Final Paper by the UN Committee of Experts on International Cooperation in Tax Matters (Advance unedited version)

At its Twenty-third Session in October 2021, the UN Tax Committee established the Subcommittee on Environmental Taxation. The Subcommittee is mandated to:

- Produce practical guidelines on targeted, additional, and emerging issues in the area of carbon taxation, which are not covered or fully developed in the Handbook on Carbon Taxation for Developing Countries. These guidelines could initially be released as stand-alone materials, and later be assembled in a publishable format. Relevant issues might include: (i) the interactions of a carbon tax with other environmental and environmentally-related taxes, (ii) the role of a carbon tax in a broader fiscal reform, including the consideration of distributional effects; and (iii) in collaboration with the Extractive Taxation Subcommittee (if one is created), work on practical tax policies/measures/incentives with the potential to accompany countries' efforts in transitioning from fossil fuel energy to renewable sources.
- Pay particular attention to the needs and priorities of, and the barriers faced by, developing countries, and report on relevant cases of current country practices, policy considerations and administrative issues.
- Work on any additional relevant environmental taxation issues as requested by the Committee.

During its mandate, the Subcommittee engaged in five workstreams, as follows: Workstream 1: The interaction of carbon taxation with other national measures; Workstream 2: The role of carbon taxes and other measures in supporting energy transition; Workstream 3: The interaction between carbon taxes and carbon offset programs; Workstream 4: Border carbon adjustment measures and how developing countries can avoid undesired spillover effects from their implementation by other jurisdictions; and Workstream 5: Environmental tax measures other than carbon taxes that are relevant for developing countries.

This document contains Parts A and B of Workstream 4. It was approved by the Committee at its Twenty-seventh Session in October 2023. Part C "*Potential responses to border carbon adjustments*" was approved by the Committee at its Twenty-ninth Session in October 2024, and its advance unedited version is available on the Committee's [webpage](#).

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Advance unedited version

Introduction and context

According to research released in November 2022 by Climate Action Tracker (CAT), the current climate policies in place around the world, if unaltered, would lead to the global temperature rising to about 2.7 degrees above pre-industrial levels by the end of the century. Implementing all the Nationally Determined Contributions (NDCs) would reduce that to around 2.4 degrees and only when all binding long-term or net zero targets are included would global warming be kept to around 2 degrees. Even under an optimistic scenario published by CAT the increase would be 1.8 degrees. It is clear that further decarbonisation measures will be required to keep the Paris Accord goal of holding global warming to 1.5 degrees alive. Such measures could include carbon pricing, regulation, support measures or (more likely) a mixture of these. Where explicit carbon pricing is used, this could be through a carbon tax or an emissions trading system (ETS).

However, as certain countries and regions unilaterally or differentially increase their decarbonisation actions, some are expressing growing concerns about carbon leakage, although some other countries do not agree with the underlying theory. This paper is not intended to endorse or refute the theory of carbon leakage, nor to advocate any particular way to address it. Instead, the paper aims to share knowledge and experiences about the measures being introduced by various countries or regions to address it and to identify the potential impacts and possible responses/considerations for developing countries.

The argument is that customers may shift sourcing, or producers may move production, from areas with stronger policy action (involving higher production or consumption costs) to lower action areas, in order to reduce the costs of complying with decarbonisation measures (whether these are created by explicit carbon pricing or by regulation). Such carbon leakage would undermine attempts to reduce emissions, as they would simply move from the higher aspiration area to the lower; and could negatively impact the economy of a country seeking to cut emissions. It is also argued that, at least theoretically, it could even result in an overall increase in emissions if production is relocated to a jurisdiction with very lax regulation of emissions.

There are also various theories on ways to address the risk of carbon leakage, and the choice may be impacted by the decarbonisation measures a country adopts. One option could be to provide support for firms susceptible to relocation. Where a country puts a price on carbon through a carbon tax, preferential rates could be used. Where an ETS is in place, free allocation of permits may be a possibility. Another option is for a country to apply a charge or levy on certain imported goods from countries with a lower carbon price to ensure the cost of embedded carbon (i.e. the emissions which are released in the production of the particular goods) in imports is equal to that of domestically produced goods. The theory is that imposing such a charge reduces the incentive for goods to be sourced from countries with a lower cost of carbon. These charges are generally referred to as a carbon border adjustment (CBA), border carbon adjustment (BCA) or a carbon border adjustment mechanism (CBAM). This paper will use the term BCA, as the generic term most commonly used in the relevant literature.

A BCA could be implemented in various ways, and its structure is likely to depend upon how the country introducing it prices carbon (e.g. whether it uses a carbon tax, an ETS or yet a different – implicit – pricing mechanism¹). However, BCAs do raise various concerns about complexity, effectiveness, compliance with World Trade Organisation (WTO) rules, the possibility to spark trade wars and the impact on developing countries – especially certain low-income countries that are heavily reliant on exports of raw materials and energy intensive products which may be covered by a BCA.

At the date of producing this paper, the EU is the only region to have a BCA in place (referred to within the EU as CBAM), which came into force on 17 May 2023. There are, however, a number of other

¹ Implicit carbon prices are instruments that change the price of products associated with carbon emissions in ways that are not directly proportional to those emissions. These instruments may be capable of providing a carbon price signal, even though they might be (primarily) adopted for other socioeconomic objectives, such as raising revenues or addressing air pollution. These would include, for example, fossil fuel taxes, energy taxes, electricity taxes as well as regulations which restrict emissions without putting an explicit price on them.

countries considering this approach, and there is a within-country mechanism for the electricity sector in California. In this paper, EU CBAM is used as a practical example to help build the analysis that will concretize the discussion on the impact of border carbon adjustments on developing countries and inform their appropriate responses (forthcoming Part C – *see* Appendix 2 of document E/C.18/2023/CRP35). The EU CBAM is explained in more detail below.

The use of BCAs is controversial and has been criticized in particular by certain developing countries as being disproportionate and potentially contrary to the principle of “common but differentiated responsibilities” under the United Nations Framework Convention on Climate Change (UNFCCC). The UN Tax Committee guidance has a potentially integral role in assisting developing countries prepare for and understand the impact of BCAs on their economies, with a key focus on how developing countries can avoid or mitigate any undesired spillover effects from other countries applying those measures.

The main focus of the work under this workstream is therefore on the potential impact of BCAs on developing countries. It will consider to what extent developing countries can ensure that their industries are not put at a competitive disadvantage by a BCA levy on their exports and how they can protect their tax base in terms of ensuring that any increase in charges on emissions flows into their revenues and not that of importing countries. However, a BCA is not the only method to address the threat of carbon leakage. This paper also considers, at a high level, what other ways can achieve this aim.

The paper is divided into three parts. Part A deals with the “What” – what is carbon leakage and what are possible responses and their aims. Part B covers the “How” – how existing BCA proposals are intended to work. This part focuses on the EU CBAM as an example of how a BCA might work in practice and because it is, at the time of writing, the only well-developed and in force initiative. Part C will address the “Response” – potential impacts of BCAs on developing countries and ways to respond to BCAs. The Subcommittee expects to present Part C for information and feedback at the Committee’s Twenty-Seventh session (a draft for information is presented in Annex B-2 to E/C.18/2023/CRP35).

Part A: Carbon Leakage and Ways to Address It

1. What is carbon leakage?

1.1 Carbon leakage – theory

There are many measures which a country may take in order to reduce its overall emissions. These include regulations and emissions standards – which control permitted quantities of emissions – carbon pricing and subsidies. Carbon pricing could be through a carbon tax whereby a government puts a charge on the emission of a certain quantity of CO₂ or an ETS whereby the government sets a cap on total emissions by certain industries or sectors and then issues tradeable permits to facilities to produce a certain quantity of CO₂. Under a carbon tax the government sets the cost and the market regulates the amount of emissions in response to the cost; whereas under an ETS the total amount of emissions are controlled and the market sets the cost of such emissions². Fuel taxes could also be used to price carbon explicitly, e.g., by including a carbon component.

Whichever approach is used there will be a cost implication for industry which may take one or both of two forms: (1) there is a cost of abating emissions through, for example, technology or changing production (abatement costs); and (2) where a country uses carbon pricing, this will give rise to a separate cost for the emissions which are produced (cost for the residual emissions).

Where a country uses regulations to restrict emissions, this will give rise to the first type of cost – i.e., abatement costs. Where a country uses carbon pricing it will give rise to the second type of cost. The cost from carbon pricing could be from paying the carbon tax or purchasing permits under an ETS (unless, of course, emitters receive permits at no cost). It is unlikely that a business can totally decarbonise – at least in the near future – in response to pricing so it will have to consider both types of costs – the cost of abatement and the cost for the residual emissions. Companies therefore need to calculate whether it is more cost efficient to increase abatement efforts so as to lower the charge on residual emissions or not to invest heavily in abatement and pay a higher amount due to the emission level.

These costs could impact an industry directly – for example a steel producer which faces increased cost of carbon and/or abatement costs – or indirectly where it has caused an increase in the price of component parts a manufacturer requires for production. It will also impact many businesses through the cost of purchased energy.

It can also be seen that cost to a business of reducing emissions by a given amount may depend upon the measures taken by its host country. If a country uses only regulations, the cost will be restricted to abatement costs. If a country uses carbon pricing, a business may incur abatement costs which are similar to the first example but still have a carbon cost for the residual emissions.

It is the increased cost – whether abatement costs or the carbon cost of residual emissions - which gives rise to the concern about carbon leakage. The concern is that producers or end consumers in high action countries – where there are stricter regulations or a higher cost of carbon – may source components and end products from countries with more lax rules where there are fewer regulations or a lower cost of carbon and therefore lower production costs. Alternatively, producers in such high action countries may transfer production to lower action countries to reduce production costs. This theory is not however universally accepted and is opposed by certain developing countries.

Carbon leakage could have both an environmental and an economic impact. First, there is a concern that the emissions release simply shifts from one country to another – so undermining the reduction measures taken in the country which is increasing decarbonization measures. It could even result in an

² See 2021 UN Handbook on Carbon Taxation for Developing Countries, Chapter 2, section 4 for a fuller explanation of carbon pricing.

overall increase in emissions depending upon the production standards in the country to which production moves.

From an economic perspective the concern is that shifting sourcing will result in reduced economic activity for firms if they lose sales to competitors' imports that do not carry a comparable carbon price. This could lead to lower tax receipts and impact employment. If production is moved abroad there would be a corresponding reduction in employment in affected sectors.

1.2 Empirical evidence of carbon leakage

Despite concerns about the theory of carbon leakage, there is currently little ex post empirical evidence to support it except in limited sectors. In 2020, the Organisation for Economic Co-operation and Development (OECD) carried out a review of the relevant evidence available at the time³. Point 29 notes:

Overall, the ex-post empirical literature finds, if any, only a small effect of climate policies on carbon leakage and competitiveness⁴...Moreover, the impacts tend to be concentrated on a subset of sectors for which environmental and energy regulatory costs are significant – a small group of industrial sectors characterised by highly energy-intensive production processes, a limited ability to fully pass through pollution abatement costs to consumers (whether due to regulation or international competition), and a lack of innovation and investment capacity to advance new production processes. Therefore, carbon leakage and competitiveness issues seem empirically to represent a risk only in this small but important subset of sectors.

The lack of evidence of significant carbon leakage could be because energy costs are often a small part of overall production costs, and so carbon pricing has so far, had a relatively small impact on production decisions. Furthermore, it could be because firms are able to adapt to carbon pricing.

Research has found that other factors such as sunk costs in infrastructure, transport costs, the availability of skilled labour, the investment climate, governance and political stability, exchange rate fluctuations, and an industry's overall "footlooseness" may influence investors' location decisions more than the differential in energy or carbon taxation so limiting the impact of carbon leakage⁵.

1.3 Why are concerns about carbon leakage increasing?

Nevertheless, concerns remain, especially among developed countries, and there are a number of theoretical studies⁶ which suggest leakage could be a reality. A [2021 UNCTAD paper](#) on the potential impacts of an EU CBAM recognizes that rising carbon prices could trigger leakage from the EU⁷ and the OECD paper referred to in section 1.2 above states at Point 19 "the vast majority of [ex ante] studies predict that unilateral climate policy will result in some form of carbon leakage". Concerns will intensify as carbon prices rise in line with increasing climate ambition. This is particularly true in sectors which are energy intensive – and so an increase in the carbon price will have proportionately greater

³ Climate Policy Leadership in an Interconnected World: What Role for Border Carbon Adjustments? OECD Publishing, Paris, <https://doi.org/10.1787/8008e7f4-en>

⁴ The OECD paper quotes Ellis, Nachtigall and Venmans (2019) for a review of relevant papers.

⁵ Jeppesen, List, and Folmer 2002; Ederington, Levinson, and Minier 2005; PMR 2015.

⁶ [Revisiting Carbon Leakage by Florian Misch, Philippe Wingender: IMF Working Paper No 2021/207](#); Gabela & Freund, Potential carbon leakage risk: A cross-sector cross-country assessment in the OECD area (2022), <https://ideas.repec.org/p/ags/pugtwp/333468.html>; Carbone, J. and N. Rivers (2017), "The Impacts of Unilateral Climate Policy on Competitiveness: Evidence From Computable General Equilibrium Models", Review of Environmental Economics and Policy, Vol. 11/1, pp. 24-42, <http://dx.doi.org/10.1093/rep/rew025>

⁷ "With the imposition of carbon taxes, the magnitude of emissions reductions and production losses are significant in the European Union, and without synchronous implementation of a CBAM, the European Union would experience substantial carbon leakage and export declines. With a \$44 per tonne carbon tax, leakage is cut by more than half, from 13.3 to 5.2 per cent, suggesting that the CBAM can be an effective instrument for substantially reducing carbon leakage." A European Carbon Border Adjustment Mechanism: Implications for Developing Countries, United National Conference on Trade and Development, 2021 (https://unctad.org/system/files/official-document/sginf2021d2_en.pdf)

impact on the ultimate price – and which are exposed to trade competition. Such sectors are referred to as energy intensive trade exposed sectors (EITE) and include iron and steel, aluminium, cement, fertilizer and glass sectors.

Some consider that the reason why empirical studies have not shown a significant issue of carbon leakage may be because currently there is not a widespread use of sufficiently high carbon pricing⁸ and/or be due to available rebates and free allowances for the sectors most exposed. For example, since the introduction of the EU ETS in 2005, the EU has addressed leakage in the most exposed sectors by issuing free permits. As part of its Green Deal and Fit for 55 Package, the EU will reduce and eventually eliminate free allowances so as to cut its greenhouse gas (GHG) emissions in 2030 by at least 55% in comparison with 1990 levels (62% in the EU ETS sectors). This in turn is set to increase the carbon price and therefore concerns about the risk of carbon leakage. According to the EU Commission's Explanatory Memorandum COM (2021) 564:

...as the Union increases its climate ambitions, the divergence with third countries' level of climate action is expected to widen, with an increased risk of carbon leakage for the EU. This would stem from the EU's increasingly ambitious GHG emissions reduction targets that should reduce the overall number of ETS allowances. As a consequence, the carbon price signal from the EU ETS is strengthened, incentivising Union producers to reduce their emissions, but widening the difference with countries without carbon pricing mechanisms. Moreover, overall free allocation will also decline over time, in line with the reduction of the emission cap.

As stated above, it is not the purpose of the paper to conclude on whether or not carbon leakage is, or may become, a reality, nor to try to ascertain how significant a problem it could pose. It is sufficient to note that some countries and regions have concerns and are considering introducing, or in the case of the EU have now introduced, BCA measures to address those concerns. The next section therefore looks at principles for addressing potential leakage.

2. Objectives in addressing leakage

2.1 Overview

Measures to address carbon leakage may have a number of objectives. These include:

- (1) Support the overall aim to reduce emissions.
- (2) Provide a level playing field, economically, for domestic producers and importers.
- (3) Provide a level playing field, economically, for exporters and foreign produced goods.
- (4) Avoid creating distortions in international trade or being considered as discriminatory under WTO rules.

Consideration could also be given to ensuring there is not a negative impact on inflation and employment – although such impacts would tend to follow from the decarbonisation measures themselves rather than the measures taken to reduce leakage.

2.2 WTO considerations

Measures will need to be compatible with WTO rules, specifically the General Agreement on Trade and Tariffs (GATT). This paper includes a brief outline of relevant WTO rules (see Appendix 2 of this paper for more detail). It does not go into a detailed analysis of whether or not any specific type of measure might or might not respect the rules. In particular, the compatibility of any regime very much depends upon the precise rules and how they are enforced in practice, and so comments in this paper are at a generic level.

⁸ See for example Point 30 Climate Policy Leadership in an Interconnected World: What Role for Border Carbon Adjustments? OECD Publishing, Paris, <https://doi.org/10.1787/8008e7f4-en>

3. Measures to address carbon leakage

There are various ways to address carbon leakage. This chapter sets out some of the measures which have already been introduced or proposed to address or prevent leakage. In addition to BCAs, these include issuing free permits under an ETS, reduced rates of carbon tax, output based pricing systems (such as in Canada) and the idea of a carbon club. Finally, this chapter briefly compares these various measures with the objectives set out in chapter 2 above.

3.1 Border carbon adjustments

A BCA works by imposing a charge on specified imported goods according to their level of embedded carbon. Depending upon the design of the BCA, the definition of embedded carbon can cover direct and indirect emissions. Direct emissions are those which are released as part of a production process – e.g., the burning of coke in steel production. Indirect emissions are those which are released in the production of electricity which is then used in the production process – e.g., electricity used in arc furnaces for aluminium. A BCA therefore requires agreed systems of quantifying and verifying embedded carbon. Potentially a BCA could even be extended to cover emissions released during the transportation of imported goods, but this would require another level of monitoring.

The charge on the embedded carbon is intended to equalise the cost of carbon in imported goods with that of domestically produced goods which arises from the local carbon price – whether imposed by a tax or an ETS. The aim is to ensure that there is no cost advantage for purchasers from sourcing goods from a country with lower carbon pricing or for manufacturers to shift production to lower cost regions.

It should be noted though that BCA proposals (including the adopted EU CBAM referred to in more detail below) focus on equalizing the cost of residual emissions and not the cost of abating emissions. In other words, any carbon price paid in the country exporting to the BCA country will be allowed as a credit against the BCA to prevent double charging, but no account is taken of any cost which the exporter has incurred in abating any carbon emission whether or not abatement costs are higher or lower in the BCA area. Therefore, where the cost of abatement is higher in a country exporting to a BCA country than for domestic producers within the BCA area, exporters will likely find their total cost of carbon (including both explicit and implicit prices) will be greater than for domestic competitors. This could be because such an exporter does not or cannot abate the carbon emissions and so pays the BCA on more emissions than the domestic producer does under the local carbon pricing scheme (unless the average cost of abatement for the domestic producer was exactly the same as the carbon/BCA price). The same would be true if the exporter does abate the carbon emissions – whether voluntarily or to meet standards in its home or other markets. When the exporter does abate carbon emissions, that exporter will be at a cost disadvantage to the extent those abatement costs are higher than for the domestic producer. Of course, the opposite could be true with abatement costs being lower in the exporting country, meaning that even after the impact of a BCA the total cost of carbon would be lower for the exporter.

As mentioned above, at the time of writing, the EU is the only jurisdiction with a BCA, which came into force on 17 May 2023. More detail is contained in Part B below. Following a transitional period that will start on 1 October 2023 and which will finish by the end of the 2025, a financial obligation comes into force on 1 January 2026. Importers of certain carbon intensive goods will then have to purchase and surrender CBAM certificates equating to the embedded carbon content of imports made into the EU. The price of the certificates will be based on the prevailing EU ETS price, but credit will be given for any foreign carbon price which is payable (e.g., through an ETS or carbon tax) and not refundable on export.

Other countries have also started discussions about introducing a BCA. Canada, for example, launched a public consultation in 2021. While the consultation has since closed, the government has not at the time of writing - yet released the report summarizing the findings. While a BCA regime could target

importers and exporters of emissions intensive goods, decisions on the role of BCAs in relations to other carbon leakage measures, as well as which goods would be covered remains pending at this time.

After leaving the EU, the UK adopted a national ETS based on the EU ETS, the possibility of introducing a BCA has been mooted and a consultation was launched on 30 March 2023. At the time of writing the outcome of the consultation has not yet been published. In a written statement to the UK Parliament on 16 May 2022, when the UK Government announced it would consult on the introduction of a BCA, it confirmed it was in discussions with the EU and would work closely with low- and middle-income countries.

In January 2023, Australia announced a review into the merits of a BCA system when it set out more ambitious greenhouse gas 2030 reduction targets in its proposed enhancements to the Australian Safeguard Mechanism.

While a BCA seeks to address leakage and level the playing field economically as regards imports, proposals do not (usually) provide relief for exports. This is because a BCA aims to impose a charge on imports to level the carbon price with that borne by domestic products. However, when domestic products are exported, there is generally no relief or rebate given for the carbon price which has been incurred, which means exports may be at a competitive disadvantage in comparison with competitor products in or from lower action countries.

Concerns have been expressed that BCAs could distort trade and in particular could have a disproportionate impact on developing countries. These issues will be developed in Part C of this paper. But the impact will depend upon several factors including the dependence on covered exports, the ability of countries to decarbonize and the associated cost, and the impact on the labour market. According to the Carnegie International Endowment for Peace, "...in almost every category [of goods], the most vulnerable countries are either developing nations in the EU's neighborhood or LDCs [Least Developed Countries] and LICs [Low Income Countries], mainly in Africa". The 2021 UNCTAD paper also showed that with a CBAM based on \$88 per metric ton of carbon content, developed countries' exports to the EU would increase in all sectors covered by CBAM except electricity, while exports from developing countries – particularly those from Bosnia and Herzegovina, Egypt, Russia, Serbia, South Africa, Ukraine, and Central Asia – would experience a significant decline.

Therefore, certain countries consider that BCAs do not meet the principle of common but differentiated responsibilities under the UNFCCC. They argue a BCA is a unilateral mechanism that shifts the burden and costs of emission reduction to developing countries and interferes with their efforts to address decarbonization – for example by pushing countries to introduce explicit carbon pricing which may not be the approach they would adopt exercising their independent sovereign right of policy making. BCAs are seen by some as fueling unilateralism and protectionism.

A BCA also needs to be applied in a non-discriminatory way to be WTO compliant. There are various opinions about how the GATT would apply, and the answer may depend upon whether the measure is based on a carbon tax, an ETS or some other type of regulation. More detail is set out in Appendix 1 of this paper. It is often argued that a BCA would have to be justified under the General Exceptions provisions of the GATT, which allow rules which would otherwise be unlawful provided they come within certain special categories. In particular, there is an exception for measures designed to protect health and another which covers rules protecting exhaustible resources. Both these exceptions could potentially apply to measures aimed at reducing greenhouse gas pollution. Assuming that the General Exceptions must be relied on, it is necessary that it can be shown that the BCA is designed to prevent

¹ Research article, "A Political Perspective on the EU's Carbon Border Tax" of 9 May 2023.

¹ [research paper by the United Nations Conference on Trade and Development](#)

¹ See for example Bacchus, "The Case for a WTO Climate Waiver", Centre for International Governance Innovation 2017; Trachtman, National Tax Journal June 2017, 70(2), pages 4640- 494; Falco, Tax Notes International Vol 98 Number 109, June 1 2020 and Vol 101 Number 1, January 4 2021.

carbon leakage and it is not a measure to protect local industry from competition from imports or bolster exports.

In summary, BCAs:

- Seek to reduce carbon leakage.
- Typically aim to equalize the explicit cost of carbon for domestic and foreign producers but not the cost of abatement (which means the total cost of carbon for an importer could be either more or less than the cost of a domestic producer).
- May help level the playing field economically between domestic and foreign producers, but the primary aim would still be to secure the efficiency of the climate policy on the domestic market so as to comply with WTO rules.
- Usually, do not level the playing field economically for exporters and foreign producers as regards exports.
- Must not be discriminatory in the way they are operated so as to comply with WTO rules.
- Have been criticised by some as potentially distorting international trade and being seen as green protectionism, in particular as regards imports from developing countries.

3.2 Free allowances under an ETS

Free allocation of allowances is the method which, for example, the EU has used historically. While it protects the competitiveness of domestic products both as regards imports and exports, it can reduce the incentive to invest in abatement technology and so does not fully support decarbonisation aims.

A number of countries price carbon using an ETS or what is commonly known as “cap-and-trade”. There are several different forms of ETS. The most developed examples are the EU emissions trading system that covers the EU states, the Western Climate Initiative which involves California and Quebec, the Republic of Korea emissions trading system (K-ETS), and the Regional Greenhouse Gas Initiative that regulates states in the North East of the US. The UK has opened its own ETS after leaving the EU in 2021. The largest single system is in China, which became fully operational in 2021. Some more detail on ETSs and the pros and cons in comparison with other carbon pricing initiatives can be found in the 2021 UN Handbook on Carbon Taxation for Developing Countries at section 4.2 of Chapter 2. Generally speaking, it is considered that ETSs are more suited to developed countries than developing ones.

Under an ETS the government sets the limit of emissions to be produced by covered industries, which are typically heavy industries like iron and steel, aluminium, cement, glass, and power plants. Emission allowances (emission permits) are then auctioned or distributed for free to industry participants which permit the emission of one ton of CO₂ equivalent. These permits or allowances can be traded between companies and other market participants. While the government therefore sets the maximum amount of CO₂ that can be produced, the market sets the price.

By setting a carbon price, an ETS could result in carbon leakage if competitors importing into the jurisdiction covered by the ETS did not have to carry a similar cost of carbon. It could also negatively impact exports from the ETS area – also increasing carbon leakage – if exporters find their costs are too high in comparison with those in the export markets. To mitigate such issues an ETS usually allows for some of the allowances to be issued for free to EITE industries so as to reduce their effective cost of carbon.

The percentage of free allowances which are provided will depend upon the precise regime and perceptions of how to balance the risk of carbon leakage and economic disadvantage against the need

for stricter emissions control. In the EU for example there have been a number of phases in the ETS with most allowances being issued for free in Phases I and II (2005-2012). In Phase III (2013-2020), auctioning became the default method, but free allowances continued to be issued according to both the risk of leakage in a sector and an emissions efficiency benchmark for each sector. The latter benchmark is designed to encourage innovation and emissions reduction notwithstanding the availability of free allowances. Under an amendment to the relevant EU law, however, free allowances are being phased from 2026 to 2034, and this will coincide with the gradual introduction of CBAM.

While the intention behind free allowances is to prevent carbon leakage and support exports, they reduce the carbon price and therefore the incentive to innovate and reduce emissions. They have also been criticised – for example in the EU context - on the basis that there is no strong evidence that the ETS price adversely affects regulated industries; that the criteria for identifying EITE industries have been too wide, resulting in free allowances being given to industries that are not at significant risk of leakage; and that there is evidence that the carbon price can often be passed through to consumers.⁹

In summary, giving free allowances under an ETS:

- Seeks to reduce carbon leakage out of a high ambition region, yet may undermine domestic efforts by reducing the cost of carbon.
- Helps level the playing field economically for domestic and foreign producers.
- Helps level the playing field economically for exporters and foreign producers.
- Is intended not to be discriminatory or to distort international trade.

3.3 Carbon tax reliefs

Certain countries with a carbon tax have used lower tax rates for EITE industries than other sectors. Such reduced rates help protect the competitiveness of domestic industry both as regards imports and exports but do not necessarily support the overall decarbonisation aims of a country.

A carbon tax can be applied to industry on a fuel basis or a direct emission basis. The former method applies the tax to particular fuels depending upon their carbon content; the latter applies the tax to a particular business or installation based on its emissions¹⁰. In either case a reduction can be used to support EITE industries. This could consist of an exemption, a rebate of tax or a reduction in the tax rates. Whichever method is used, it is likely to be beneficial for the relief to be temporary – so as to allow time for adaptation - as otherwise the incentive to decarbonise within impacted industries could be significantly reduced. Another approach used by some countries is to apply a threshold for exemption of smaller operators which are less able to bear the cost of compliance and which produce a relatively small percentage of emissions.

Sweden offers an example of reduced tax rates. Sweden had energy taxes as far back as the 1920s. When the carbon tax was introduced in 1991, a lower rate was applied for fuels used for heating in the industrial sector to take account of the risk of carbon leakage. Originally, individual energy intensive companies were subject to a lower rate by Government decisions while horticulture was taxed at 15% of the standard rate. However, this was found to be over complex, to lack transparency and to risk distortion between industries. Therefore, it was changed to a simpler 2 tier system in 1993 with one lower rate of 25% of the standard rate applicable to industry. This was supplemented by a further special reduction for energy intensive industries. Over time the supplemental rules were abolished, the reduced rate was raised and then finally removed in 2018.

Sweden currently has one of the highest carbon prices globally when considering the impact of both the carbon tax and Sweden's participation in the EU ETS. The gradual increase of carbon tax coupled with the initial lower rates has been associated with the success of the Swedish model and credited with creating acceptability and a time frame for business to adapt. According to Hammar and Akerfeldt,

⁹ See for example Policy Briefs, 2017/02, Florence School of Regulation, Energy, Climate.

¹⁰ See for example the 2021 United Nations Handbook on Carbon Taxation for Developing Countries, Chapter 6.

“Such a lower tax level has been the prerequisite for a high tax level for other sectors and one important cause of the emission reductions achieved in these sectors.”¹¹

In summary, a reduction in the carbon tax burden:

- Seeks to reduce carbon leakage out of a high ambition region but potentially but may undermine domestic efforts by reducing the cost of carbon unless strong signals are given on the trajectory of rate increases.
- Helps level the playing field economically for domestic and foreign producers.
- Helps level the playing field economically for exporters and foreign producers.
- Is intended not to be discriminatory or distort international trade.

3.4 Output-Based Pricing System (OBPS) in the Canadian Federal Backstop

Canada has a federal system and under the Pan-Canadian Approach to Pricing Carbon Pollution each of the provinces can design their own carbon pricing systems provided they meet national minimum stringency criteria (the federal benchmark). Where a province does not introduce the requisite pricing system a Federal Carbon Pricing “Backstop” System applies; a province may also choose to apply this rather than introduce its own rules.

Part of the Federal Backstop System is the OBPS which sets emission intensity performance standards for various covered industries. If a facility has lower emissions than its emissions limit (calculated as the performance standard multiplied by the facility’s production) in any given year it receives credits which it can carry forward or sell. If a facility exceeds its emissions limit it can use its own carried forward credits, purchase credits or pay the carbon price in respect of the excess.

The performance standards are based on the national production-weighted average emissions intensity for each covered industry and also take account of both the risk of carbon leakage and the difficulty in reducing emissions in each sector. They are set at 80% of the average for industries with a low or medium risk and 90% or 95% for those at high risk. By setting the performance standard as a higher percentage of the average emissions intensity the Canadian OBPS therefore reduces the average cost of carbon for EITE industries but maintains the marginal price signal on all emissions by issuing credits to those that perform better than their emissions limit.

In summary, the calculation of the performance standards under the OBPS:

- Reduces average carbon costs but maintains marginal price incentive on all emissions.
- Helps level the playing field economically for domestic and foreign producers.
- Helps level the playing field economically for exporters and foreign producers.
- Intended not to be discriminatory or distort international trade.

3.5 Carbon clubs

The phrase “carbon club” can mean very different approaches. Some (early) ideas focus on a more exclusive type of arrangement where participants progressively align carbon policy. More recent proposals however aim to create more of a “coalition of the willing,” with the intention of sharing best practices and information rather than mandating certain approaches. At the time of writing there are active discussions about how to launch such initiatives in various forums and the extent to which they would contribute to or would undermine the global approach called for in the Paris Agreement, with its emphasis on common but differentiated responsibilities .

¹¹ “CO2 Tax Experience in Sweden 20 Years of Experience and Looking Ahead”.

3.5.1 Original proposals

One of the first people to suggest this was William Nordhaus, Sterling Professor of Economics at Yale University. The purpose of the club was to address concerns about countries which were perceived as not addressing climate change quickly enough and effectively “free-riding” on the efforts of others. Member countries of the club would agree a minimum carbon price – which would be increased over time – and countries which did not sign up to it would be subject to a general tariff on imports. Such a club would not, therefore, avoid the need for some kind of border tariff. It would, however, act as an incentive for club members to accelerate decarbonisation and further incentivize countries to join the group. Nevertheless, such proposals have been criticised on a number of grounds.

Firstly, there are social and political reasons why certain countries may not be able to increase carbon pricing in line with expectations of the club and may need to rely on alternative measures. It may not therefore work in practice to bring countries together.

Secondly, it may pose WTO issues as it may breach the Most Favoured Nation provision by imposing tariffs on goods from some countries and not others.

Thirdly, such a club could undermine the collective agreement through the United Nations Framework Convention on Climate Change (UNFCCC) and in particular the concept of common but differentiated responsibilities.

3.5.2 G7 proposal

A different version of a carbon club was initially mooted by German Chancellor Olaf Scholz. His idea was to create a coalition of countries willing to work together on decarbonisation rather than trying to use the more adversarial approach of carbon tariffs. The idea was given high priority during the German Presidency of G7 in 2022. G7 leaders issued a statement at their Summit in Elmau, Germany, in June 2022 on the creation of a Climate Club “to support the effective implementation of the Paris Agreement.” Terms of Reference were released on 12 December 2022 stating:

“Its particular focus will be on the industry sector, thereby contributing to supporting green growth, and addressing, inter alia, carbon leakage and other possible risks to mitigation efforts, while complying with international rules. The Climate Club’s initial scope will be on unlocking potential for the decarbonisation of hard-to-abate industrial sectors. Further sectors with substantial greenhouse gas mitigation potential can be included as agreed.”

It also states: “the Climate Club will provide a high-ambition intergovernmental forum for discussion and serve as an enabling framework for increased cooperation, improved coordination and potential collective action” and clarifies it will promote efficiency, foster existing initiatives and avoid duplication of efforts.

The Club will be open to all countries and based on 3 pillars:

- 1) **Advancing ambitious and transparent climate mitigation policies.** This involves working towards a common understanding through comparative analysis of the effectiveness and economic impact of policies, including price-based and non-price-based climate change mitigation instruments;
- 2) **Transforming industries.** The Climate Club aims to advance the enabling conditions for substantial sectoral industry decarbonisation including through building on the Industrial Decarbonisation Agenda, the Hydrogen Action Pact, and expanding markets for green industrial products; and

- 3) **Boosting international climate cooperation and partnerships.** This includes facilitating multi and bi-lateral cooperation and may include members, on a voluntary basis, providing funding and support for developing countries.

The Club is to be open to all “climate-ambitious” countries who “indicate their commitment” to some baseline criteria, including “the full and effective implementation of the Paris Agreement”. There is to be a secretariat and the possibility for both high-level meetings and working group sessions. The G7 will ask the OECD and International Energy Agency, working with other agencies, to host an interim secretariat.

It remains to be seen how this proposal will develop and whether or not there will be uptake outside the G7. The next steps are endorsement of the proposal by the G7 and establishment of a Climate Club Task Force to support the full launch of the Climate Club, which is intended to be operational in time for COP28 in November 2023.

3.5.3 OECD initiative

In February 2023, the OECD launched the Inclusive Forum on Carbon Mitigation Approaches (IFCMA). According to a November 2022 report to G20 Leaders: “Recognising the centrality of the UNFCCC negotiations, the IFCMA will support Paris Agreement goals by fostering exchange among countries, facilitating easier access to systematic data and analysis to support better understanding of the combined effect of diverse policy approaches and enabling countries to share their climate change mitigation policy experiences”¹².

At the launch event it was proposed that the IFCMA would develop two workstreams: one to carry out a stock take on mitigation policy instruments that countries use to reduce carbon emissions and one to develop a consistent methodology to assess the effect of policies. The IFCMA does not have an objective to reach any agreement on outcomes or setting rules.

3.5.4 EU

Recital 72 to the Regulation on CBAM reiterates the need for a climate club to be developed amongst countries with carbon pricing and other comparable instruments to function under the auspices of a multilateral organisation.

3.5.5 Implications

An advantage of a collaborative club approach is that it recognises that the trajectory towards net zero greenhouse gas emissions is more important than the means of achieving this. Some countries may use carbon pricing but others may rely on regulation or providing incentives for green investment. Therefore, while fully aligning with decarbonisation aims, it does not involve measures of imposing import charges which could potentially lead to trade distortions and WTO issues. The G7 proposal also focuses on the hard to decarbonise sectors. It remains to be seen how any developments will sit within the UNFCCC principle of common but differentiated responsibilities.

In summary a carbon club:

¹² OECD Secretary General Report to G20 Leaders on the Establishment of the Inclusive Forum on Carbon Mitigation Approaches, Indonesia 2022.

- Will not directly stop carbon leakage but may incentivise cooperation that will reduce it.
- Will not automatically level the playing field economically for domestic and foreign producers but may assist, in particular, where there are sectorial agreements.
- Will not automatically level the playing field economically for exporters and foreign producers but may assist, in particular, where there are sectorial agreements.
- Should not be discriminatory or distort international trade.
- Will need to be designed to take account of the UNFCCC principle of common but differentiated responsibilities.

Advance unedited version

Part B: Border Carbon Adjustment Measures

4. A more detailed analysis of the EU Initiative

As stated earlier, the EU CBAM is the only regime which is actually in force at the time of writing. It was adopted by the EU co-legislators during spring 2023 and entered into force on 17 May 2023 (Regulation 2023/956¹³). This part therefore analyses the CBAM in more detail to provide an example of how a BCA could work in practice. While a BCA could be implemented in very different forms, the issues raised for developing countries are likely to be similar. This part therefore sets the background for further commentary which will be provided in Part C. Nevertheless, if other countries or regions do implement BCAs which are significantly different from the EU CBAM, this could create an increased compliance cost for impacted developing country exporters which would then have to comply with the rules of multiple regimes.

4.1 Context of the EU initiative

The European Climate Law establishes the goal for the EU to become climate-neutral by 2050 and sets the intermediate target of reducing net greenhouse gases by at least 55% by 2030, compared to 1990 levels. To achieve this the Commission adopted in July 2021 a package of legislative proposals ('Fit for 55' package) which aims at supporting innovation towards a less carbon intensive industry in the EU. This package consists of a set of ambitious, inter-connected proposals, balancing between pricing rules, standards, and support measures, and building on already existing measures as well as new instruments. As part of this package, the Commission adopted a proposal establishing a Carbon Border Adjustment Mechanism (CBAM)¹⁴. After negotiations between the EU co-legislators, the regulation implementing CBAM was adopted and came into force on 17 May 2023. Following the transitional period from 1 October 2023 until 31 December 2025, the CBAM will gradually impose a charge on the importation of certain goods from non-EU countries into the EU to ensure similar pricing as goods produced in the EU.

According to the EU institutions, CBAM will address the perceived issue of carbon leakage and prevent EU's emission reduction efforts from being offset by an increase in emissions outside the EU resulting from the relocation of production to third countries, or from an increase in imports of more carbon-intensive imports. CBAM is intended to be a viable alternative to the measures currently addressing this risk under the EU ETS. In this respect, CBAM is designed to function in parallel to the EU ETS as its international arm, while mirroring and complementing its functioning.

Rules governing the implementation of the CBAM will start with a transitional phase from **1 October 2023** to 31 December 2025, during which there will only be a reporting obligation. As of 1 January 2026, there will be a progressive phase in of the charging provisions. CBAM will be fully operational as of 2034. This gradual phasing in of CBAM is intended to allow for a careful, predictable and proportionate transition for EU and non-EU businesses, as well as for public authorities. The CBAM Regulation also contains many provisions which allow the EU Commission to adopt rules governing the implementation of CBAM in particular areas and to make reviews in order to enable proposals to the EU co-legislators to possibly extend the scope of CBAM. For example, on 17 August 2023, the

¹³ Published in the Official Journal of the EU on 16 May 2023 ([Publications Office \(europa.eu\)](https://eur-lex.europa.eu/eli/reg/2023/956/oj))

¹⁴ COM/2021/564.

Implementing Regulation “laying down the rules for the application of Regulation (EU) 2023/956 of the European Parliament and of the Council as regards reporting obligations for the purposes of the carbon border adjustment mechanism during the transitional period”¹⁵ was published in the Official Journal and entered into force on the day following its publication. As described below, this Regulation sets out detailed rules on how to quantify embedded emissions as well as the reporting requirements during the transitional phase. However, the details of how CBAM will operate in the definitive regime in practice are not yet fully established at the time of writing, as several implementing regulations based on empowerments in the CBAM Regulation are forthcoming up until 2026.

4.2 What goods does CBAM apply to?

CBAM will initially apply to a limited number of imports of specific goods whose production is carbon intensive, and which are considered at most significant risk of carbon leakage: cement, iron and steel, aluminium, fertilisers, electricity and hydrogen. It will also apply to a few precursors and selected downstream products (such as nuts and bolts). A detailed list of the goods identified by their Customs Nomenclature codes (CN codes) used for customs purposes is set out in Annex I to the CBAM Regulation; for example, pipes, tubes, and parts used in railway or bridge construction are all listed within the iron and steel and aluminium categories. With this scope, CBAM will eventually – when fully phased in – capture more than 50% the emissions of the ETS covered sectors. It is, however, quite possible that the scope of CBAM will be extended and the preamble to the Regulation refers to a desire to extend the scope to all sectors currently covered by the EU ETS by 2030.

Before the end of the transitional period the EU Commission will present a report to the EU Parliament and Council on the possibility of extending CBAM to other goods including further precursor materials for goods already covered by CBAM. The Regulation specifically refers to the possible extension to organic chemicals and polymers.

At least one year before the end of the transitional period the Commission will also present a report recommending goods which are further down the value chain and which are recommended to be included in the Regulation. This will be based on developing a methodology for considering cumulated GHG emissions and the risk of carbon leakage.

Furthermore, the Commission will continuously monitor for cases where products have been slightly modified without changing their essential characteristics and it appears there is insufficient due cause or economic justification other than avoiding CBAM obligations by enabling slightly modified products to fall outside the CN codes listed in the Regulation. Where there is evidence of this occurring, the Commission is empowered to amend the Annex to include new CN codes in the CBAM scope to prevent the circumvention.

4.3 What types of emissions are covered by CBAM?

CBAM applies to certain GHG emissions. Generally, such emissions are of carbon dioxide. However, for certain listed goods it also applies to perfluorocarbons and nitrous oxide (as does the EU ETS).

CBAM will cover both direct and indirect emissions during the transitional phase which involves reporting. It should be noted, however, that EU law currently provides financial support for the indirect emission cost passed on in electricity prices for certain products. In the definitive regime, CBAM will apply to direct emissions and to indirect emissions embedded in CBAM goods that do not receive

¹⁵ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32023R1773&qid=1695302587096>

indirect cost compensation under the EU ETS framework in the form of State aids (basically cement and fertilisers), on the basis of a methodology to be defined in an implementing act before the end of the transitional period.

The information collected during that period will also help to evaluate the possible extension of indirect emissions to the rest of the CBAM goods, after careful calibration taking into account the interaction with the EU ETS indirect cost compensation mechanism as well as the changes to the electricity market design.

Finally, during the transitional period the Commission will also present a report on the possibility of extending CBAM to the embedded emissions from the transportation of CBAM goods and transportation services.

4.4 What are the mechanisms for applying CBAM?

During the transitional phase, only reporting obligations will be required. Within a month of the end of each quarter, EU importers will have to submit a report on the goods imported in that quarter to the Commission. Therefore, the first report will be due by 31 January 2024 at the latest, covering imports made during the last quarter of 2023. The report should specify the quantity of goods (megawatt hours for electricity), the embedded emissions and the carbon price due (if any) in the country of origin.

In the definitive regime post 31 December 2025, EU importers of CBAM goods will have to apply for the status of authorized CBAM declarant in the CBAM registry managed by the EU Commission and CBAM goods will only be permitted to be imported into the EU by authorised declarants. Authorisation will be granted by a designated competent CBAM authority in the Member State where the importer is established. Where the importer is not established in an EU Member State, it is the indirect customs representative which needs to apply for such status.

By 31 May of each year, the authorised CBAM declarants will have to submit a CBAM declaration via the CBAM registry stating the verified emissions embedded in those goods imported in the previous calendar year. At the same time, they will have to surrender a sufficient number of CBAM certificates they will have had to purchase in advance, covering the declared emissions embedded in the CBAM goods imported during the preceding calendar year. The price of these certificates will be calculated depending on the weekly average auction price of EU ETS allowances expressed in €/tonne of CO₂ emitted, so ensuring that the cost of carbon for importers tracks the comparable cost (under the EU ETS) for domestic EU producers.

Where goods are imported from a country which imposes a carbon price (whether by an ETS or a carbon tax) the number of CBAM certificates to be surrendered will be reduced to give credit for the foreign carbon price effectively paid and not rebated on export. The mechanism for calculating this reduction has not been decided yet and the Commission is empowered to issue rules on how it will operate in practice.

Certificates are purchased from Member States via an EU platform to be established. The authorised declarant must ensure that at the end of each quarter it has enough certificates in its account to cover 80% of the embedded emissions in CBAM goods imported since the beginning of the year. If not all the certificates need to be surrendered by 30 June of each year the declarant can sell back to the Member State up to 30% of the certificates purchased during the year at the original purchase price. After 30 June the remaining certificates are cancelled and therefore lost.

Member States are required to impose appropriate penalties on authorised declarants which fail to fulfil all their obligations and on anyone importing CBAM goods without being properly authorised. Penalties should also apply during the transitional period for importers which fail to adequately report.

4.5 Calculation and verification of emissions

The Regulation refers both to calculating actual embedded emissions where possible and using default values where this is not possible. Default values will be based on the average emissions for the exporting country and the type of goods, subject to a mark-up to be determined. Where there is not sufficient accurate information on such average values, the default value is to be set based on a percentage of the worst performing facilities in the EU.

The methodologies deemed acceptable for calculating actual embedded emissions during the transitional period are detailed in the Implementing Regulation published on 17 August 2023. These have been developed by the Commission assisted by a CBAM committee of EU Member State representatives. The Commission has also had a draft of the implementing regulation out for public consultation as well as conducted meetings with an expert group composed of representatives EU Member State Authorities, EU industries and a number of third countries acting as observers.¹⁶

According to Annex II of the Implementing Regulation, it is first necessary to identify an aggregated goods category according to the Combined Nomenclature Code of the imported goods. Annex III then sets out the emissions to be monitored for each aggregated category of goods depending upon the production route and relevant precursors used. Rules are also laid down for monitoring indirect emissions and net heat flows and associated emissions where measurable heat is produced in, consumed in, imported to or exported from a facility. All the emissions are then attributed to the production processes associated with the goods produced and these emissions are then used to calculate the specific direct and indirect emissions of the goods in accordance with formulae set out in Section F of Annex III of the Implementing Regulation.

Embedded emissions are to be monitored using either a calculation-based approach (where emissions from source streams are determined on the basis of activity data) or a measurement-based approach (consisting of a continuous measurement of the concentration of the relevant greenhouse gases themselves). Annex III of the Implementing Regulation sets out detailed rules and recommendations on how either method should be applied. Certain derogations are allowed up to 31 July 2024 and 31 December 2024 which allow local monitoring, reporting and verification rules to be applied (see section 4.6 below for more detail).

As regards the definitive regime, the Commission will lay down implementing rules on the elements of the calculation methods for embedded emissions in a separate implementing regulation, to be adopted before the start of the definitive period and building on the experience gained from the reporting having taken place during the transitional period. During the definitive period, it will also be necessary for authorised declarants to ensure that the embedded emissions declared in the CBAM declaration have been verified according to rules set out in the Regulation by a verifier which is accredited by a national accreditation body in an EU Member State. There is also a possibility to use a verifier accredited for a relevant group of activities under the EU ETS. However, an operator in a 3rd country outside the EU may also apply to register information on emissions from its installation recorded in the CBAM registry. Such information must be verified by an accredited verifier and can then be used by the authorised declarant – rather than obtaining a separate verification report. On site visits by verifiers is mandatory except where specific conditions for waiver are complied with.

4.6 Reporting and calculation of embedded emissions during the transition period

Appendix 1 of this paper sets out some of the requirements for calculating and reporting embedded emissions during the transitional period which are contained in the Implementing Regulation for that period.

¹⁶ Register of Commission expert groups and other similar entities (<https://ec.europa.eu/transparency/expert-groups-register/screen/expert-groups/consult?lang=en&groupID=3862>).

In order to provide some flexibility in the initial period, rather than applying the calculation-based or measurement-based approaches set out in Annex III of the Implementing Regulation (the “EU Method”), it is possible to calculate embedded emissions using a different approach. Until 31 December 2024, it is possible to either use a method under a monitoring, verification and reporting system required under local law – e.g., in relation to carbon pricing or a compulsory emissions reporting scheme, or an emissions monitoring scheme that includes verification by an accredited verifier. Until 31 July 2024, where the reporting declarant does not have the information available to apply any of these approaches, other methods, including the use of default values, may be used but must be indicated and referenced in the quarterly CBAM reports. However, these derogations can only be used if they “lead to similar coverage and accuracy of emissions data” compared to the EU Method.

4.7 Interaction with free allowances under the EU ETS

As part of the Fit for 55 package the EU is also phasing out free allowances under the ETS – which is a key existing way of addressing carbon leakage. Directive (EU) 2023/959, which implements this change, was adopted in spring 2023¹⁷ and entered into force in June 2023. EU Member States will need to transpose the directive in national legislation by 31 December 2023. It is recognised that while some ETS allowances are provided free of charge to certain industries (free allocation), there must be a corresponding relief allowed under CBAM to ensure equal treatment.

Therefore, the definitive CBAM regime will enter into force in 2026 in a progressive way so that only the proportion of emissions that would not benefit from free allowances under the ETS will be subject to the CBAM charge. The Commission is empowered to adopt implementing acts determining how this will work in practice. The timeline agreed for the phase in of CBAM after the transitional period will mirror the phase out trajectory of free allocation as agreed between the EU Parliament and the Council in December 2022. According to a schedule defined in the revised EU ETS rules free EU ETS allowances will be phased out as follows:

2026	2027	2028	2029	2030	2031	2032	2033	2034
2.5%	5%	10%	22.5%	48.5%	61%	73.5%	86%	100%

As a result, CBAM will only be fully phased in by 2034 and by that time authorised declarants will need to purchase and surrender CBAM certificates for 100% of emissions embedded in the imported CBAM goods.

4.8 Measures for cooperation with third countries and to protect least developed countries

The Regulation does not have any specific exemptions for developing countries. However, the Commission will continue to discuss CBAM with the EU’s trade partners. It is also indicated that the EU will engage with developing and least developed countries to assist them towards the path of adapting to the CBAM and promoting a green transition including through providing financial support (Points 70-74 of the Preamble).

Point 72 of the preamble to the CBAM Regulation notes that a forum (a “Climate Club”) should be set up between countries with carbon pricing and other comparable instruments to promote implementation of ambitious climate policies. Such a club would be open, voluntary, non-exclusive and could function under the auspices of a multilateral organisation – see section 3.5 for further details on Carbon Clubs. By the end of the transition period the Commission is to report on the impact on CBAM goods imported from developing countries with special attention to least developed countries. It will also report on the

¹⁷ Published in the Official Journal on 15 May 2023 (<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32023L0959>).

impact of technical assistance given. There is also a provision which applies where an unforeseen, exceptional and unprovoked event which is outside the control of one or more third countries impacted by CBAM occurs and has a devastating effect on the infrastructure or economies of the countries concerned. In such a case, the Commission is to assess the situation and, if necessary, make a proposal to amend the Regulation to address the situation.

4.9 Exports

As set out in the Commission's impact assessment, accompanying the proposal for a CBAM regulation, the replacement of free allocation by the CBAM might affect the competitiveness of exports to markets without carbon pricing. Export-specific subsidies are, however, considered incompatible with WTO requirements on the basis of the Agreement on Subsidies and Countervailing Measures and could be countervailed by the trading partners on their borders.

The amendments to the EU ETS that are now in force provide for several safeguards in this respect. These include, in particular, the gradual phase-out of free allocation from 2026 until 2034, and the use of the revenues from the auctioning of free EU ETS allowances, that will no longer be granted to the CBAM sectors, in the context of the Innovation Fund, whereby special attention will be given to the production of goods in CBAM sectors in the EU, irrespective of if the goods are aimed for internal market consumption or exported to third countries.

These measures agreed in the context of the revision of the EU ETS should, according to the EU co-legislators, continue to provide an adequate level of carbon leakage protection, while incentivising the decarbonisation of the EU industry, in line with the WTO rules.

The directive amending the EU ETS also foresees a new review clause in the EU ETS regarding CBAM to support EU exports. By the end of the transitional period of CBAM (i.e. December 2025), the Commission is to assess the risk of carbon leakage for goods produced in the EU intended for export to non-EU countries and, if needed, present a WTO-compliant legislative proposal to address the identified risk. While the EU CBAM operates in parallel with the EU ETS, many of the design considerations would apply with a CBAM designed to complement a traditional carbon tax. While the pricing under such a system may be easier (the BCA tax would apply at the prevailing domestic rate and there would be no need to calculate a price on a weekly basis), it would still be necessary to consider whether it should apply to indirect as well as direct emissions, to have reporting requirements, systems for calculation and verification of emissions, and give credit for any foreign carbon price. A BCA based on a tax would also not provide relief for exports unless there was a rebate of tax at the border which would itself raise WTO issues.

Appendix 1: Considerations during the EU CBAM transition period

The EU CBAM has a transitional period that will commence on 1 October 2023 and runs until 31 December 2025, the purpose of which is to collect data that will help fine-tune the shape of CBAM in view of its definitive phase from 2026. During the transitional period, the obligations of the importer are limited to reporting obligations only, without paying any financial adjustment.

Each importer, having imported CBAM goods during a given quarter of a calendar year must, for that quarter, submit a CBAM report containing information on the imported quantity of CBAM goods, the direct and indirect emissions embedded therein (only direct emissions for electricity), as well as carbon pricing due in the country of production. The first quarterly report, covering the quarter ending 31 December 2023, is due by 31 January 2024 at the latest.

On 17 August 2023, an Implementing Regulation regarding the specific transitional period reporting obligations was published in the Official Journal. This Regulation sets rules in respect of data requirements, calculation of embedded emissions, reporting, penalties and the creation of a CBAM Transitional Registry. The Commission has, in order to facilitate the reporting during the transitional period, published guidance documents on CBAM installations for importers of goods into the EU as well as for installation operators outside the EU¹⁸.

CBAM reporting data requirements

The reporting requirement includes information such as:

- Quantity of imports
- CN Codes of goods
- Country of origin
- Installation where goods were produced
- Production routes and qualifying parameters
- For steel goods, the ID of steel mill for the batch of steel goods
- Specific direct emissions of goods in CO₂ per tonne (CO₂ per MWh for electricity)
- Indirect emissions data:
 - Electricity consumption
 - Use of actual or default values
 - Corresponding emission factors
 - Amount of specific indirect emission of goods (CO₂ per tonne).

Information in respect of the carbon price due in the country of origin is to include:

- The type of carbon price
- The monetary amount, a description of the carbon pricing instrument and possible compensation measures
- The form of rebate or any other form of compensation available
- Reference to the legal act governing the carbon price, rebate or other forms of relevant compensation
- The quantity of embedded direct or indirect emissions covered by the carbon price and the rebate or other form of compensation, including free allocations.

Reporting declarants may request the producer of goods to use an electronic data template provided by the European Commission.

¹⁸ https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en#guidance-documents

Methods for the calculation of embedded emissions

To provide for some flexibility during the first year of implementation, there is a choice of calculating emissions as follows:

- **EU Methodology:** The embedded emissions of CBAM goods are to be determined using either a calculation-based approach (where emissions from source streams are determined based on activity data) or a measurement-based approach (consisting of a continuous measurement of the concentration of the relevant greenhouse gases themselves). To ensure sufficient flexibility for goods produced by small operators in third countries, estimated values may be reported for the production steps in installations whose contribution to direct emissions do not exceed 20% of the total embedded emissions of the imported goods.
- **Acceptable alternative methodologies until 31 December 2024** as follows:
 - a carbon pricing scheme where the installation is located; or
 - a compulsory emission monitoring scheme where the installation is located; or
 - an emission monitoring scheme at the installation which can include verification by an accredited verifier.
- **Other non-prescribed methodologies until 31 July 2024:** A further alternative is provided for reporting declarants who cannot obtain the requisite information that would allow them to report under one of the methodologies listed above. Reporting declarants may, therefore, use other non-prescribed methodologies for determining the emissions, including default values made available and published by the Commission.

As of 1 January 2025, only the new EU Method will be accepted. Furthermore, even during the first year, the alternative methods may only be used if they “lead to similar coverage and accuracy of emissions data” compared to the EU method.

CBAM reports

Quarterly reports are to be submitted in the CBAM Transitional Registry no later than one month after the end of that quarter, with the first CBAM report due by 31 January 2024 at the latest. Modifications may be made to the reports until two months after the end of the relevant reporting quarter (for the first two reporting periods, CBAM reports may be modified until the submission deadline of the third CBAM report).

A CBAM report is deemed incorrect if:

- the data in the submitted report do not comply with the requirements of the Implementing Regulation;
- the reported embedded emissions deviate from the use of reporting rules without any justification; or
- the reporting declarant has submitted wrong data and information.

Penalties

Penalties will be imposed by the competent national CBAM Authority if reporting declarants have not taken necessary steps to comply with obligations to submit a quarterly CBAM report or correct an incorrect or incomplete CBAM report. Penalties are to be set between EUR 10 and EUR 50 for each tonne of unreported embedded emissions, increasing in accordance with the European index of consumer prices.

CBAM Transitional Registry

The CBAM Transitional Registry is a standardised electronic database containing common data elements for reporting in the transitional period that will enable information exchange between the European Commission, the competent authorities, customs authorities of the Member States and reporting declarants.

A component of the CBAM Transitional Registry is the CBAM Trader Portal through which reporting declarants:

- Are to submit CBAM reports;
- Will receive notifications related to their CBAM compliance obligations.

The CBAM Trader Portal can be used to store information about third country installations for later re-use.

Advance unedited version

Appendix 2: WTO considerations – compatibility with the General Agreement on Trade and Tariffs (GATT)

A unilateral measure with the potential to impose a restriction on trade must be non-discriminatory for it to comply with the GATT and other WTO rules.

According to Article II.1(a) and (b) of the GATT, a country cannot apply less favourable tariffs to imports than set out in its general tariff schedule and cannot impose any other duties or charges. These provisions would prima facie prevent a charge being applied specifically on the carbon content of goods.

However, Article II.2(a) permits the imposition of a tax which is equivalent to an internal tax provided it is not applied in a discriminatory way in breach of Article III (National Treatment). There is no consensus amongst commentators about whether or not these provisions would allow a BCA which was applied to the embedded carbon content of imports. Some argue such a BCA would not be discriminatory. Others consider that, even though the charge would be calculated in a similar way to the charge on domestically produced goods, it could lead to an imported product with a high embedded level of carbon being taxed at a higher rate than the exact same domestic product which had a lower carbon content. Such an argument is based on the premise that it is the actual goods which need to be compared irrespective of their carbon content.

Furthermore, Article I contains a Most Favoured Nation clause which arguably prevents differential taxes being applied to imports from countries depending upon the carbon content.

Therefore, it is often considered that a BCA would need to be justified under one of the exceptions laid down in Article XX of the GATT, which permits certain charges which would otherwise fall foul of the general prohibitions.

Article XX(b) provides an exception related to protecting the life or the health of humans, animals, or plants. Article XX(g) provides that a measure restrictive of trade may be justifiable if it is related to the conservation of exhaustible natural resources, provided that it is made effective in conjunction with restrictions on domestic production or consumption.

Regarding the Article XX(g) exception, it is worth noting that more than once the WTO panel and the Appellate Body have declared that exhaustible natural resources are deemed to include both living and nonliving resources¹⁹, with specific examples including petroleum²⁰, gasoline²¹, an assortment of living species²², and clean air²³.

In *US-Gasoline*, a case before the Appellate Body of the WTO²⁴, the panel in 1996 agreed with the United States' assertion that clean air was an exhaustible natural resource²⁵, because it could be

¹⁹ WTO Appellate Body Report, United States — Import Prohibition of Certain Shrimp and Shrimp Products (US-Shrimp), WT/DS58/AB/R, at paras. 128 and 131 (Oct. 12, 1998).

²⁰ Id. at para. 128.

²¹ WTO Panel Report (unadopted), United States — Taxes on Automobiles (US-Automobiles), DS/31/R, at para. 5.57 (Oct. 11, 1994).

²² Examples include tuna (WTO Panel Report, United States — Prohibition of Imports of Tuna and Tuna Products from Canada (US-Canadian Tuna), L-5198, at para. 4.9 (Feb. 22, 1982)), salmon and herring (WTO Panel Report, Canada — Measures Affecting Exports of Unprocessed Herring and Salmon (Canada-Salmon and Herring), L/6268, para. 4.4 (Mar. 22, 1998)), dolphins (WTO Panel Report (unadopted), United States — Restrictions on Imports of Tuna (US-Tuna (EEC)), DS/29/R, at para. 5.13 (June 16, 1994)), and sea turtles (WTO Appellate ⁸⁴ *US-Shrimp*, Appellate Body Report, para. 149).

²³ *US-Gasoline*, p. 23 and *US-Shrimp*, Appellate Body Report and Panel Report, para. 156 which says that “paragraphs (a) to (j) of Article XX is a *limited and conditional* exception from the substantive obligations contained in the other provisions of the GATT 1994, that is to say, the ultimate availability of the exception is subject to the compliance by the invoking Member with the requirements of the chapeau”. This interpretation was said to be cohesive with the negotiating history of article XX. Body Report, US-Shrimp, at para. 134).

²⁴ WTO Panel Report, US-Gasoline, at para. 6.37.

²⁵ Appellate Body - United States - Standards for Reformulated and Conventional Gasoline - AB-1996-1;

https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds2_e.htm

²⁵ Wiers extends this finding, arguing that “air not ‘depleted’ by excessive greenhouse gas concentration caused by human-induced CO₂ emissions may also qualify as an exhaustible natural resource.” The loss of biodiversity due to climate change may also qualify as an

exhausted by pollutants such as those emitted through the consumption of gasoline, and that for this reason it could also be considered justifiable under Article XX(g) GATT²⁶. This finding is relevant to a border carbon tax, but also to an extension of the ETS to cover a border price (such as the notional carbon price system explored under the EU CBAM proposal), because it allows extending the protective measure to cases where there is no clear connection to the pollution potential of the measure in question²⁷.

Another important test is whether the measure complies with the provisions of the chapeau of Article XX. The chapeau is an introduction to an article which explains its purpose and aids in its interpretation. Once it is proven that an environmental measure corresponds to one of the appropriate paragraphs in Article XX (paragraphs (b) or (g)), it should then pass the test under the chapeau of Article XX, meaning that the measure must not be “applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade”²⁸. It cannot be automatically assumed that because the measure falls within the terms of Article XX(b) or (g), it necessarily complies with the requirements of the chapeau²⁹. The chapeau is meant to prevent an abusive application of the exceptions to article XX³⁰.

The chapeau provides for a two-part test. The first part determines whether the measure would be discriminatory (with respect to other countries), and the second part whether it would impose a disguised restriction to international trade (in respect to some products, to the detriment of others).

These are some of the conclusions to be reached from the doctrine instated in the chapeau of Article XX^{31 32}:

- (1) The measure must not result in arbitrary or unjustifiable discrimination between countries where the same conditions prevail.
- (2) Different tax thresholds (or rates) may be employed for developed and developing countries because they are not subject to the same conditions when competing in international markets.
- (3) The measure must be flexible and not capricious. It must be necessary in order to avoid being arbitrary.
- (4) Even if discriminatory or trade-restrictive, the measure must be justifiable on environmental grounds.

exhaustible natural resource. See in this respect, Wiers, *French ideas on climate and trade policies*, Carbon and Climate Law Review, Vol. 2, No. 1 (2008) pp. 18–32, and OECD, *Border Carbon Adjustment and International Trade: A Literature Review* (Condon / Ignaciuk), OECD Trade and Environment Working Papers 2013/06, p. 21, available at: <https://www.oecd-ilibrary.org/docserver/5k3xn25b386c-en.pdf?expires=1622152864&id=id&accname=guest&checksum=20C2C2647349F4B0407A065A584A4CEF>

²⁶ Panel Report, *United States — Standards for Reformulated and Conventional Gasoline*, WT/DS2/R, adopted 20 May 1996, para. 6.37.

²⁷ See Monjon / Quirion, *How to design a border adjustment for the European Union Emissions Trading System?* Energy Policy 38 (2010) 5199–5207, at p. 5201.

²⁸ Marrakesh Agreement, Appendix, General Agreement on Tariffs and Trade 1947, art. XX in *WTO (1999), The Legal Texts: The Results of the Uruguay Round of Multilateral Trade Negotiations* (Cambridge University Press, Cambridge, 1999), p. 455.

⁸⁴ *US-Shrimp*, Appellate Body Report, para. 149.

³⁰ *US-Gasoline*, p. 23 and *US-Shrimp*, Appellate Body Report and Panel Report, para. 156 which says that “paragraphs (a) to (j) of Article XX is a *limited and conditional* exception from the substantive obligations contained in the other provisions of the GATT 1994, that is to say, the ultimate availability of the exception is subject to the compliance by the invoking Member with the requirements of the chapeau”. This interpretation was said to be cohesive with the negotiating history of article XX.

³¹ For further discussion on the admissibility criteria, see T. Falcão, *Ensuring an EU Carbon Tax Complies With WTO’s Rules*, Tax Notes International, January 4, 2021, p. 41, Falcão and Englisch, *EU carbon border adjustments for imported products and WTO law*, Environmental Law Reporter, 51, 10857, October 2021 (part 1) and Environmental Law Reporter, 51, 10935, November 2021 (part 2) pg. 10943, also available for download at SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3863038

³² Relevant jurisprudence can be found in Appellate Body Report, *United States—Standards for Reformulated and Conventional Gasoline* 27, WTO Doc. WT/DS2/AB/R (adopted May 20, 1996), and the references cited in Panel Report, *European Communities—Measures Affecting Asbestos and Products Containing Asbestos*, para. 8.233, WTO Doc. WT/DS135/R (adopted Apr. 5, 2001), Appellate Body Report, *United States—Import Prohibition of Certain Shrimp and Shrimp Products*, para. 166, WTO Doc. WT/DS58/AB/R (adopted Nov. 6, 1998); and Appellate Body Report, *United States—Import Prohibition of Certain Shrimp and Shrimp Products*, Recourse to Article 21.5 by Malaysia, para. 134, WTO Doc. WT/DS58/AB/RW (adopted Nov. 21, 2001).

- (5) It must preferably be advanced on a bilateral or multilateral basis. If advanced unilaterally, the country should demonstrate that it has put some effort into trying to conclude a multilateral agreement to support the practice.
- (6) The measure must not be a disguised restriction on international trade. That is, it must not forestall market access, impose insurmountable requirements, or conceal an objective to restrict access to the country's market by posing as an environmental exception.

Further comments on the application of WTO rules to a BCA

Some commentators consider that it should be possible to design a BCA that is employed in respect of a carbon tax so it can pass the legality test under WTO rules.

There are also good arguments to support a BCA aiming to equalize the carbon price in respect of an ETS regime being comparable to a carbon tax, although such a topic has not yet been subjected to WTO Dispute Settlement³³. It is highly probable that an ETS regime whose scope contemplates the auctioning of 100% of the permits would be considered substantially similar to the imposition of a carbon tax, since the economic impact of either auctioning permits or taxing enterprises is essentially the same.

Nevertheless, certain developing countries have expressed the view that it is hard for a unilateral BCA to pass the legality test under WTO rules.

Finally, if a BCA was proposed based upon a regulatory approach, it would be detached from any policy approach that has been put to the test under the WTO's Dispute Settlement Body. Legality questions would likely surface regarding the fact that such measures would be incapable of imposing an explicit price on carbon making it harder to establish the corresponding border adjustment in a manner that was not discriminatory against third states.

³³ Falcão, Tatiana and Englisch, Joachim, EU Carbon Border Adjustments for Imported Products and WTO Law, SSRN, July 2021, pg. 75.