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Addressing Carbon Leakage in the EU:

Making CBAM work in a Portfolio of Measures

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1. Introduction

As part of its "Fit for 55" package of legislative proposals released in July 2021 to operationalize the enhanced climate ambition under the "European Green Deal" (EGD), the European Commission (EC) issued a legislative proposal for a regulation establishing a "Carbon Border Adjustment Mechanism" (CBAM). Representative of a type of policy instrument more commonly known as border carbon adjustments (BCAs), the CBAM is intended to provide a safeguard against the risk of emissions leakage, that is, the relocation of carbon-intensive economic activities from the European Union (EU) to third countries due to the cost of EU climate policy ambition on production, domestic consumption and investment decisions.

This report builds on extensive previous work by ERCST, surveying the rationale and policy options for a CBAM (Marcu et al. 2021a), exploring the challenges of the differentiated characteristics of the various candidate sectors (Marcu et al. 2021b), elaborating what we see as the most appropriate design elements for CBAM (Marcu et al. 2021c), and assessing the European Commission's proposed CBAM and its history to date (Marcu et al. 2021d).

That body of work has had a consistent line of argument with respect to CBAM: as complex and difficult an undertaking as it might be, with inevitable trade-offs between the environmental and economic benefits of the measure as well as its technical, legal and political viability, the CBAM represents the best tool we have for addressing the risk of leakage in the context of uneven global climate ambition and considering the realities of a declining amount of available free allocation.

However, to be effective and viable in the long-term, gaps need to be recognized and addressed. To do so it must be situated as part of a portfolio of complementary policy instruments and/or undergo changes from the proposal put forward by the EU Commission in July 2021.

This report completes the second phase of ERCST's work on CBAM by focusing on those complementary policy instruments. It is not intended to duplicate or replicate work already done and in the public domain.

It does so by focusing on those areas of concern where the current proposal may most need complementary policy support. Unsurprisingly, early reactions from domestic stakeholders have identified a number of concerns about issues that the legislative proposal currently under discussion leaves open or unaddressed. Industry representatives, for instance, have criticized the lack of provision for European exports, which they fear will be vulnerable to leakage as free allocation subsides; similarly, they have expressed concern about how the proposal deals with indirect emissions, downstream substitution effects and avoidance strategies, such as resource shuffling. Other domestic stakeholders have cited the long implementation timeline as a missed opportunity to accelerate the transition away from current safeguards against emissions leakage. Outside the EU, meanwhile, trade partners have criticized the absence of provisions on revenue sharing, and the limited crediting of foreign climate policies, where the EU will only consider explicit carbon pricing.

As it stands, however, any changes to the proposed design will alter the existing equilibrium and incur new tradeoffs, which in turn will invite a new set of stakeholder concerns. No easy solutions

exist for the most contested issues under the CBAM, and some issues may not be resolved at all within the scope of the CBAM itself. That is where policy options beyond the CBAM come in – policies that can help foster markets for low- and zero-carbon goods, accelerate the availability and viability of new breakthrough technologies and processes, and advance international cooperation on BCAs and related policy elements. The potential of the CBAM as a tool to address carbon leakage and competitiveness concerns – but also its intrinsic shortcomings – can only be fully appreciated when seen in the policy landscape within which it is implemented.

Building on the methodology used in previous ERCST reports (Marcu et al., 2020; Marcu et al., 2021a-c), Section 2 of this report identifies a suite of policy options that can complement or substitute for a future CBAM to address identified shortcomings of the latter. It does so by briefly introducing each policy option and assessing it against a set of criteria, including its environmental and competitiveness benefits as well as its administrative, legal, and political viability. Using the same evaluation framework for all policy options allows for comparing policy options with each other and with the CBAM design elements that each option would complement or replace. Section 3 then explores six areas in which previous work by ERCST has identified the need for either complementary policies or revised design elements within the CBAM, focusing for the most part on the former. It assesses the viability of various complementary policies as candidates in a portfolio approach that could effectively enable the EU's climate ambition.

Overall, thus, this report favors a broad perspective that situates the proposed CBAM in the context of a wider policy portfolio, rather than venturing into comprehensive discussion of technical details of any one alternative or complementary policy, which would exceed the scope of the analysis. Such in-depth evaluation will follow in the third phase of the ERCST Project "Border Carbon Adjustments in the EU" with individual reports dedicated to critical challenges such as the treatment of EU exports, indirect emissions and avoidance strategies, crediting of foreign climate policies, and international cooperation on BCA principles and practices.

2. Policy Options to Address Leakage

2.1 Overview

This section introduces a suite of policy options that can potentially address identified concerns with the existing CBAM proposal. Eight types of policy options are set out, ranging from market pull to technology push instruments, from economic incentives to requirements, and from long term approaches to short-term corrective measures. It covers options that would entail a different CBAM design and would therefore constitute an amendment to the July 2021 proposed design, as well as alternative or complementary tools, with the focus being on those complementary policy instruments. They include well known and tested tools, such as RD&D support and carbon cost compensation, to newly emerging options such as carbon contracts for difference.

Each of the policy options is first briefly introduced, and then assessed against a set of criteria, including its environmental and competitiveness benefits as well as its administrative, legal, and political viability.

2.2 Convergence of Carbon Pricing/Climate Policy Ambition

Achieving greater convergence of climate policy addresses the root cause of carbon leakage, namely asymmetry of climate efforts internationally. Convergence can span harmonisation of carbon pricing (e.g. through linking ETS, or global minimum carbon price) or climate policy ambition overall that helps level the playing field for EU and foreign producers. For example, linking of ETSs can alleviate high carbon prices and the associated carbon leakage that would have otherwise prevailed in some regions. Convergence can also span comparable explicit and implicit CO_2 prices in energy and industrial sectors, as well as institutional readiness and capacities to strengthen climate policies.

Over the long term, governments should continue diplomatic efforts to achieve greater convergence internationally, however, policy convergence achievement is costly and politically unlikely in the near- and medium-term. Convergence for a critical number of major economies with broad coverage (rather than for every single economy), could improve feasibility while sizeably addressing carbon leakage.

Environmental benefit	Competitiveness benefit	Technical & Administrative Feasibility	Legal Feasibility	Political & Diplomatic Feasibility
Risk of carbon leakage is reduced as an increasing number of countries take a coordinated approach to climate action	Risk of carbon leakage is reduced, as trading partners' actions to reduce emissions converge with domestic action	Convergence globally would entail significant technical and administrative efforts.	Convergence would require changes to existing national laws or instigating new laws.	Policy convergence globally is politically and diplomatically unlikely in the near- and medium-term, given among other things the bottom-up spirit of the Paris Agreement and the CBDR-RC principle.

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2.3 Exemptions and Rebates including Free Allocation

This policy option can encompass a diversity of forms of exemptions or rebates to address different challenges. Free allocation could be seen as one variant of up-front exempting from or rebating compliance cost (full = exemption; partial = rebate) that has been in the past used to protect EU producers from the risk of carbon leakage and going forward can be used to address carbon leakage related to EU exports or to limit the risk of shifting carbon leakage down the value chain. This option could also encompass blanket exemptions from the coverage of measures e.g. exemptions from the geographic coverage of CBAM.

These exemptions and rebates could be applied as an on/off approach or could be applied on a tiered approach depending on the level of carbon leakage risk. The latter approach has been put in application in some jurisdictions, such as California, but has been resisted by EU business in the past. In terms of WTO compliance, concerns have been raised in the literature about the consistency of free allocation and WTO subsidy and anti-dumping rules. That said, free allocation has been around since the inception of the EU ETS, and has only recently been challenged by the US[1]. Non-declining free allocation could see challenges mounting, which if successful would be used to justify other retaliatory trade moves, including tariffs. Free allocation has been in the past criticized from both sides (business and ENGOs) for providing too little/too much protection against carbon leakage/competitive pressures. As it currently beginning seen as endangered species, it has become a rallying cry for business who see many benefits in it, in spite of past criticisms.

Environmental benefit	Competitiveness benefit	Technical & Administrative Feasibility	Legal Feasibility	Political & Diplomatic Feasibility
Seen as less than ideal from an environmental point of view as it mutes the price signal of the EU ETS	Rebates like free allocation effectively shield EU producers from the competitiveness impacts that would arise from the full application of the ETS, though that protection is not viable in the medium term.	Technical details such as free allocation benchmarks require data collection and administrative effort.	Free allocation has been implemented for many years but is starting to be questioned in its current form. Other measures such as LDC exemptions would violate GATT non-discrimination obligations, though they are aligned with WTO's provisions for their differential treatment or UNFCCC principles.	Overall, non-declining free allocation could see mounting challenges, which if successful would be used to justify retaliatory trade moves. Special granting of free allocation for exports may trigger a potential political controversy.

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[1] Dec. 2020, DOC CVD cases against Italy and Germany. See https://www.trade.gov/faq/final-determinations-antidumping-and-countervailing-duty-investigations-forged-steel-fluid-end

2.4 Credit and Compensation (including Indirect Carbon Cost Compensation)

This policy option is designed to address a specific problem: indirect carbon costs may be incurred by EU producers, but not by foreign producers. The CBAM, as proposed by the EC, by itself would not address this discrepancy.

There are two types of electricity-related costs that EU producers would bear under a CBAM that would cover indirect emissions. One is **indirect emissions costs**. These incur these when electricity producers pass through to consumers some of the costs they incur under the ETS. The other is **indirect carbon costs**. These are a product of the way electricity is priced in the EU, with prices set at the level of the marginal producer. That is, the last producer to be called on to sell to the grid that sets the price, and since the order of dispatch calls on the lowest cost producers first, the marginal producer will be the costliest. Often that producer will be a high-carbon source, and some of the costs involved will be attributable to its purchase of ETS allowances. These are indirect carbon costs: the cost of high-priced electricity as a result of the marginal pricing regime.

A CBAM that covered indirect emissions would charge foreign producers at the border for the carbon embedded in the electricity they used, leveling the playing field for indirect emissions costs, but would not seek to level the playing field for indirect carbon costs. Other things being equal, this would lead to a risk of leakage. That risk will decline over time as the EU's electricity production decarbonizes, and even today some marginal producers have low GHG emissions.

The EU deals with this problem through state aid rules that allow Member States to compensate certain types of installations for their indirect carbon costs, with output-based payments up to 75% of the price a benchmark producer would pay for the emissions embodied in electricity produced at the average GHG-intensity of its regional grid. Not all Member States choose to do so, and not all those that do choose to pay the full 75%.

Environmental benefit	Competitiveness benefit	Technical & Administrative Feasibility	Legal Feasibility	Political & Diplomatic Feasibility
Mitigates risk of leakage, since indirect carbon costs are borne by EU producers and not by foreign producers. But leakage risk not eliminated; voluntary character means not all states will apply, and the formula means compensation may be incomplete.	Mitigates competitiveness impacts, since indirect carbon costs are borne by EU producers and not by foreign producers. But competitiveness risk not eliminated; voluntary character means not all states will apply (and not in the same manner), and the formula means compensation may be incomplete.	Instrument is already in existence, so methodologies exist.	May constitute a subsidy under the WTO's ASCM, but has never been taken to dispute settlement.	Relatively uncontroversial in its present form – has not given rise to complaints.

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2.5 Consumption Charges

A consumption charge based on the carbon content of goods could act as an alternative to the CBAM. Neuhoff et al (2016) propose a charge based on a default value for carbon content of certain materials, liability for which is incurred at the basic material stage and is carried through successive stages of the production process to final goods. The charge can be assessed on imports and relieved for exports, like VAT. The proposal would use the ETS allowance price as its carbon price. This instrument would successfully impose the cost of carbon throughout the value chain for the covered materials and would protect both upstream and downstream producers. It would protect producers against leakage risk from its own charges, because of the border adjustment, but would need to rely on free allocation in the ETS to protect against leakage risk arising from ETS costs. The use of a default value for material GHG intensity would blunt incentives for decarbonization.

Another variation of such an instrument would base the charge on actual carbon content of goods. This would improve on the design above by providing incentives to foreign and domestic producers to lower emissions intensity, but would greatly complicate the scheme since it would involve declarations and default values for the actual carbon content of processed and manufactured goods.

Environmental benefit	Competitiveness benefit	Technical & Administrative Feasibility	Legal Feasibility	Political & Diplomatic Feasibility
Protects against leakage due to consumption charges (but not due to ETS carbon pricing). Internalizes carbon costs throughout the value chain. May double tax, if imports already subject to carbon tax in home jurisdiction. If using default values for GHG intensity, does not provide incentives for firms to decarbonize.	Relies on free allocation to protect against competitiveness impacts in home market, since imports charged at same rate as domestic charge Acquittal of tax liability for exports alleviates impacts of the charge in foreign markets.	Narrow scope makes regime manageable. Difficult for importers to declare amount of embodied materials, and very challenging for them to declare carbon intensity of those materials if actual intensity values demanded. Very challenging for EU to determine, maintain, default values for embodied materials in a range of imports.	Very likely the charge is WTO-compliant, since it is a non-discriminatory tax. Accompanying free allocation regime in the ETS may be an issue, especially if free allocation is maintained for covered sectors and ramped down for others.	Less controversial than BCA, since it is structured as an internal tax, and since EU product benchmark is a favourable assumption. Requires keeping high levels of free allocation to covered material sectors – would be politically controversial.

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2.6 Product Requirements

Product requirements – which are already widely used to regulate quality, safety, and sustainability aspects of products when these are used – can also condition access to the domestic market on the carbon embodied in the products, that is, the carbon intensity of their production. Such product requirements apply to both domestic and imported products, prohibiting or otherwise restricting the ability to sell products unless these comply with the specifications set out in the product requirements. They can define eligible production processes and technologies, effectively amounting to a ban of any goods produced with other technologies, or can instead take the shape of a more flexible performance standard, enabling producers to choose different technology options to remain below a specified carbon intensity limit. Performance standards, in turn, can also be implemented to enable trading of credits between producers, further increasing compliance flexibility. As such, product requirements can reduce the supply of carbon-intensive goods and create an incentive for input substitution and process changes. For imported products, a product requirement requires importers to provide documentation on the production process of shipped goods, which can take the form of a conformity statement coupled with certification by an independent third party. Many environmental product requirements currently in use are voluntary, including, for instance, international standards on carbon footprint labelling and sustainability criteria, although the EU has also introduced mandatory product requirements with its technical regulations on fuel quality and lifecycle emissions of biofuels.

Environmental benefit	Competitiveness benefit	Technical & Administrative Feasibility	Legal Feasibility	Political & Diplomatic Feasibility
Product requirements can help foster the emergence of a market for low-carbon products, incentivizing substitution effects and process changes. For products that meet the product requirements, however, they do not impose a price on residual emissions.	Product requirements level the playing field by banning domestic and foreign products that do not meet the specified requirements, but do not price the residual carbon of either. If EU producers are simultaneously subject to a carbon price under the EU ETS and foreign producers are not, there will be an asymmetry in climate policy costs that may necessitate other safeguards, such as a CBAM, making product requirements a useful complement. In global markets, product requirements can promote international diffusion of low-carbon standards; domestic products do not have to meet the requirements if sold internationally.	Defining technical regulations and standards related to the production process is complex, and securing reliable data on process and production methods from foreign producers incurs an additional administrative burden for authorities and producers.	In order to meet WTO disciplines in the TBT Agreement and GATT, product requirements should be origin-neutral, not unnecessarily trade restrictive, and implemented in a fair and transparent manner.	Product requirements are already widely used for safety, quality and sustainability objectives, although requirements based on process and production methods may be more contentious; downstream domestic producers may altogether lose access to imported raw materials if these do not meet the requirements.

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2.7 Carbon Contracts for Difference (CCfDs)

Carbon contracts for difference (CCfDs) offer a project-based policy tool to address the challenge of commercializing low-carbon technologies in the industrial sector, providing a means of reducing risk in capital-intensive projects with long investment periods by effectively guaranteeing a certain return for the incremental costs of an investment that delivers emissions reductions below the current best available technology. CCfDs cover the difference between a variable reference price and a fixed (contracted and guaranteed) strike price, paying out the difference between the strike price and a variable carbon price such as the price of allowances in an ETS. Whenever the allowance price falls below the strike price, the CCfD is triggered, resulting in a payment from the contracting partner of the CCfD, likely – but not necessarily – a government authority. If the ETS price rises above the strike price, however, no payment takes place, and the CCfD can even be designed to require a repayment from the beneficiary to the contracting partner. CCfDs thus offer an assurance about the future trajectory of carbon prices in the form of a fixed price for certain emissions reductions, guaranteeing the typically high carbon prices needed to enable investments in technologies producing low- and ultra-low carbon materials. In terms of implementation, CCfDs can be made operational through a competitive tendering process (e.g. a reverse auction) for projects resulting in the production of such material, where the most cost-effective bids are awarded a CCfD for a fixed duration. Revenue to fund the CCfD can be sourced from other climate policies, such as a carbon tax or ETS, or even a BCA. In order to determine the amount to be paid under the CCfD, the producer has to identify the quantity of the relevant product it has produced, as well as the emissions thereby avoided, with production data, avoided emissions and incremental costs potentially subject to independent verification.

Environmental benefit	Competitiveness benefit	Technical & Administrative Feasibility	Legal Feasibility	Political & Diplomatic Feasibility
Strong environmental benefit. Can help overcome investor risk aversion for first-of-a-kind low-carbon projects to overcome the technology valley of death; helps reflect the social cost of carbon, which the EU ETS currently does not.	Improves competitiveness of low-carbon products relative to all carbon-intensive goods with lower CapEx/OpEx; also hedges against leakage vis-à-vis foreign products, but only for selected projects in the near term (and for domestic low-carbon products more generally in the long term). Hence when addressing leakage from asymmetrical carbon pricing such as the EU ETS, CCfDs can only be a complement to measures such as a CBAM-	Relatively straightforward, since limited data requirements: production level, product benchmark and substitution rate. Can piggyback on EU ETS.	Low risks under EU state aid rules and WTO law; competitive bidding process is a must for compliance with EU state aid rules, openness to foreign bidders important under WTO rules.	Less controversial than BCA, since it does not apply specifically to imports or exports. Political economy of CCfDs generally favorable.

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2.8 Research, Development, and Demonstration (RD&D)

Industrial decarbonization will require low- and ultra-low-carbon technologies whose deployment will incur substantially higher production costs. Current market conditions and policy frameworks do not justify the required investments and associated risks to develop and deploy such technologies at scale, a barrier exacerbated by the positive externality of technology spillovers that enable others to capture some of the benefits of innovation (Bataille et al., 2018). Policies that support research, development and demonstration (RD&D) are thus critical to foster new technologies and processes and ensure their transition from basic research to commercial maturity. Such policies have to help address long development timelines and technical and market risks of new industrial technologies, infrastructure needs of the latter, lock-in effects benefitting incumbent technologies, as well as political and economic uncertainties. A range of policies can promote RD&D, including establishment of public research laboratories, public funding of academic, public, or private research institutions, research partnerships between the public and private sector, support for entrepreneurial development of innovative technologies, and financial incentives for private RD&D efforts in the form of tax credits, contract research, and grants (Rissman et al., 2020).

Environmental benefit	Competitiveness benefit	Technical & Administrative Feasibility	Legal Feasibility	Political & Diplomatic Feasibility
RD&D support policies can have a strong environmental benefit in the medium to long term by helping critical technology options reach maturity and commercial scale. They can help overcome barriers to innovation and investment in low- and ultra-low-carbon industrial technologies, yielding positive spillover effects.	Over time, RD&D support policies can improve the competitiveness of low- and ultra-low-carbon production methods by driving down their cost relative to carbon-intensive production methods with currently lower CapEx/OpEx, but some of those benefits will also diffuse to foreign producers. Hence when addressing leakage from asymmetrical carbon pricing such as the EU ETS, RD&D support can only be a complement to measures such as a CBAM-	Implementation of RD&D support policies is technically and administratively straightforward, since data and disbursement requirements are limited. Selection of RD&D support beneficiaries can be problematic.	Low risks under EU state aid rules and WTO law, especially where RD&D support benefits public research institutions and universities; competitive bidding process and openness to foreign bidders recommended when support is intended for private sector.	Less controversial than BCA, since it does not apply specifically to imports or exports. Political economy of RD&D support policies is generally favorable, although appropriation of public funds can encounter political and procedural obstacles.

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2.9 Government Procurement

Green government procurement can provide a substantial market for low-carbon goods that suffer a cost disadvantage relative to conventionally produced goods. It is often justified as a time-limited industrial policy support that helps innovators drive down costs by producing at scale, and learning by doing. As an accompaniment to a CBAM, government procurement could bolster the CBAM's main function: providing protection from the leakage and competitiveness impacts that might result from higher cost low-carbon production.

It can be implemented by assigning environmental performance or technology conditions to publicly purchased materials, such as a mandate to purchase steel of no more than a set GHG-intensity, or to purchase only steel produced using low-carbon processes. It can also take the form of a premium assigned to low-carbon products in the evaluation of suppliers' bids.

Environmental benefit	Competitiveness benefit	Technical & Administrative Feasibility	Legal Feasibility	Political & Diplomatic Feasibility
Would provide markets for low-carbon goods that are costlier than conventional substitutes. Could help drive down production costs of new low-carbon technologies and processes by allowing production at scale.	Would shelter higher cost producers of low-carbon goods by providing them a market. Might also allow them to become competitive through production at scale and learning by doing. When addressing leakage from asymmetrical carbon pricing such as the EU ETS, government procurement can only be a complement to measures such as a CBAM-	Widely practiced. No challenges of technical or administrative feasibility.	There is some question whether low-carbon conditions are in breach of the Agreement on Government Procurement, but widely held to be legal.	Widely practiced. No challenges of political or diplomatic feasibility.

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3. Addressing Gaps in the CBAM Proposal

3.1 Overview

This section examines how the different policy options described in the preceding section - including policies that can serve as a complement or as alternatives to a future CBAM - can help close gaps left by the current CBAM proposal. It does so for selected features of the proposed CBAM design that leave critical challenges only partly addressed or defer a solution to future policy decisions.

3.2 Addressing Leakage in Exports to Global Markets

Take-aways. Over the long term, outside of the framework of the CBAM itself, the EU and Member State governments should prioritize diplomatic efforts with trade partners to achieve greater convergence of climate policy ambition and help lower barriers to trade in low-carbon goods. Strategic use of CBAM revenue can support such efforts. In the short and medium term, the EU and Member States can help lower the cost of low-carbon technologies through continued deployment of support measures, including free allocation, Carbon Contracts for Difference and RD&D subsidies, and indirectly through domestic product standards and targeted government procurement, to help level the playing field between low-carbon EU exports and foreign products in global markets. Consideration of exports within the framework of the CBAM itself merits further exploration as regards the justification for, and potential legal risks associated with, a rebate or credit for exports.

Gap Analysis. The proposed CBAM covers only imports entering into the EU, but acknowledges that such limited trade flow coverage may exacerbate leakage risks facing exported EU products sold in foreign markets: because European products are, on average, less carbon intensive than foreign products, loss of EU market share in foreign markets may result in a net increase of global emissions. If the export competitiveness of EU producers is undermined because carbon leakage provisions are limited to imports, entire value chains may be placed at risk also in the internal market, thereby increasing strategic import dependencies. Despite stakeholder pressure to extend the CBAM to exports, the European Commission has instead opted to retain a gradually declining share of free allocation for installations in the EU ETS, avoiding what the EC deems to be legal risks arising from favorable treatment conditional on export performance, and therefore only offering a partial and temporary solution to the challenge of leakage in the context of European exports to global markets. Several policy options can help limit such potential leakage risk.

Option			Comments
Policy Convergence	Relationship to EU CBAM	*Complementary/ Alternative*	By leveling the playing field for EU exporters and foreign producers, policy convergence through harmonization of domestic carbon prices and climate policy more generally can effectively limit emissions leakage related to EU exports, but its achievement is politically unlikely in the near & medium term
	Effectiveness	*High*	
	Feasibility	*Low*	
Exemptions or Rebates	Relationship to EU CBAM	*Complementary/ Amendment*	Free allocation and other exemptions or rebates can effectively limit emissions leakage related to EU exports by lowering or eliminating the carbon cost faced by EU exporters, but as seen with recent U.S. trade defence measures risk being challenged as prohibited export subsidies (especially if only granted for emissions associated with exported products), and the muted price signal may weaken an Article XX GATT defence of the CBAM as a whole
	Effectiveness	*Medium/High*	
	Feasibility	*Medium*	
Credits and Compensation	Relationship to EU CBAM	*Complementary/ Amendment*	Carbon cost compensation and other forms of crediting can effectively limit emissions leakage related to EU exports by lowering or eliminating the carbon cost faced by EU exporters, while risking being challenged as prohibited export subsidies (especially if only granted for emissions associated with exported products), and the muted price signal may weaken an Article XX GATT defence of the CBAM as a whole
	Effectiveness	*Medium/High*	
	Feasibility	*Low*	
Consumption Charges	Relationship to EU CBAM	*Alternative*	On their own, domestic consumption charges have no effect on leakage related to EU exports, but when coupled with sustained free allocation, they can effectively limit such leakage by lowering or eliminating the carbon cost faced by EU exporters. They must rely on non-declining free allocation, however, which incurs legal risk, and may not be viable in the medium to long term. Administrative implementation of consumption charges is technically demanding
	Effectiveness	*Medium/High*	
	Feasibility	*Medium*	
Product Standards	Relationship to EU CBAM	*Complementary/ Alternative*	Product standards only set direct requirements for products destined for the domestic market, but may indirectly promote low-carbon production processes for foreign products sold in global markets, especially when foreign producers invest in new production capacities and want to ensure broad market access
	Effectiveness	*Medium/Low*	
	Feasibility	*High*	
Carbon Contracts for Difference	Relationship to EU CBAM	*Complementary*	Carbon contracts for difference do not directly benefit exports, and they are premised on a high carbon price signal. By accelerating the deployment of low-carbon production processes, however, they help drive down the cost of such processes and thereby contribute to a more level playing field between EU exports and more carbon-intensive foreign products sold in global markets
	Effectiveness	*Medium/Low*	
	Feasibility	*High*	
RD&D Support	Relationship to EU CBAM	*Complementary*	RD&D support measures, such as innovation subsidies and pilot projects, do not directly benefit exports. By accelerating the

Option			Comments
	Effectiveness	*Medium/Low*	development and deployment of low-carbon production processes, however, they help drive down the cost of such processes and thereby contribute to a more level playing field between EU exports and more carbon-intensive foreign products sold in global markets
	Feasibility	*High*	
Government Procurement	Relationship to EU CBAM	*Complementary*	Government procurement does not directly benefit exports, as relevant products tend to be purchased in the domestic market and used within the territory of the acquiring government. Indirectly, government procurement can help scale up deployment of low-carbon production methods, helping drive down their cost
	Effectiveness	*Medium/Low*	
	Feasibility	*High*	
Other: Trade Barrier Reduction	Relationship to EU CBAM	*Complementary*	Lowering of trade barriers through reduction or elimination of tariffs for low-carbon products can improve the competitiveness of low-carbon EU exports in global markets, but only between Parties to such arrangements. Earlier attempts to negotiate an Environmental Goods Agreement stalled, evidencing low support at the time
	Effectiveness	*Medium/High*	
	Feasibility	*Medium/Low*	
Other: Carbon Tax	Relationship to EU CBAM	*Alternative/ Amendment*	Replacing the EU ETS with a carbon tax would allow rebating or crediting exports – an effective safeguard against leakage – without risk of violating WTO subsidies rules, although the muted price signal may weaken an Article XX GATT defence, and a shift from the EU ETS to a fiscal measure is politically and legally highly unlikely
	Effectiveness	*High*	
	Feasibility	*Low*	

Discussion. As shown in the foregoing table, the options that offer the most effective protection against leakage related to exports tend to have possible tradeoffs. Exemptions or rebates – including free allocation – as well as credits raise possible legal risks, for instance with the WTO regime on subsidies and countervailing measures. Alternative policies, such as consumption charges or a shift from the EU ETS to a carbon tax, could allow a more robust solution to the challenge of export-related leakage, but is likewise hampered by limited feasibility in administrative, legal, or political terms. None of the remaining options offer strong protection against export-related leakage in the short term, but can help level the playing field between EU exports and foreign products in global markets over time. These include product standards and support measures for research, development and deployment of low-carbon products, including carbon contracts for difference. Coupled with continued – but difficult – efforts to achieve greater climate policy convergence across trade partners, these largely feasible support measures can play an important role in improving the competitiveness of EU exports in global markets as current levels of free allocation decline in the EU ETS while the CBAM is gradually phased in. Because the risk of export-related carbon leakage is unlikely to be fully countered by alternative or complementary policies in the very near-term, further exploration of the rationale and viability of exemptions or rebates for exported products within the CBAM itself is warranted.

3.3 Indirect Emissions and Indirect Carbon Costs

Take-aways. In the short term, the pragmatic option is non-coverage of indirect emissions coupled with maintaining the existing regime for compensation for indirect costs. However, this option fails to price the most significant source of imported embedded carbon. In the longer term, it would be better to include indirect costs in the CBAM coverage, and to reform the regime for compensation for indirect costs such that it was more consistently applied across the Member States, and such that it more accurately corresponds to the full carbon cost increment imposed on EU producers by the EU's marginal pricing scheme for electricity. If indirect emissions were covered, it would also be necessary to deal with the risk of resource shuffling – a challenge addressed in the following section.

Gap Analysis. The proposed CBAM covers only direct (or scope 1) emissions, and does not cover indirect emissions – emissions embodied in purchased electricity.[2] Other things being equal, this would lead to a risk of leakage. Electricity is covered under the EU ETS, so EU producers purchasing carbon-priced electricity would be bearing a charge that unregulated foreign producers would not face. For electricity-intensive goods such as aluminum, the cost differential might be significant.

Covering indirect emissions under CBAM—the most significant source of emissions from materials production—would reduce that risk of leakage, but only partially. The costs faced by EU electro-intensive producers are not equal to the costs associated with their actual indirect emissions.

Their "indirect carbon costs" are instead the price impacts of the EU ETS on their purchased electricity. Electricity in the EU is priced based on marginal costs, with the last (highest cost) producer setting prices.

Typically, that will be a high-carbon producer, paying for EU allowances, which adds a premium to prices paid by electricity consumers. That premium—an artifact of the EU's marginal-cost pricing system—would not be paid by foreign competitors who would pay only for the costs of their indirect emissions.

For the moment, this problem is addressed through state aid rules that allow the Member States to compensate some indirect carbon costs to affected firms. But that compensation is complex.

The assumed carbon costs are based on a benchmark product-specific electricity consumption that is set by the most efficient firms. As well, the assumed costs are based on a regional average weighted CO_2 intensity of fossil-fuel-based electricity producers in a geographical area, without regard to their proportion of the final mix in that area. The allowed compensation is set to a

[2] The terminology used here is slightly different than in the GHG Protocol, where "indirect emissions" are all emissions other than scope 1 emissions. That would include scope 2 emissions (purchased electricity, but also steam and heat), and scope 3 (all other emissions, including transport-related, and those embodied in input goods).

maximum of 75% of assumed costs at the sectoral level, or at 1.5% of gross value added at the firm level for those firms most affected. Finally, member states are free to set compensation as they like, and some set it below even the 75% level, or do not compensate at all.[3]

It is worth noting that this problem is becoming less pressing over time, as the EU's grid becomes less carbon intensive. The fewer high-cost marginal producers exist, the less the difference between indirect carbon costs and the actual costs of indirect emissions.

Reforming (or maintaining) the mechanism for compensation of indirect carbon costs would not solve all the problems involved by CBAM coverage of indirect emissions. The section following deals with the risks that such coverage would create for resource shuffling.

Option			Comments
Policy Convergence	Relationship to EU CBAM	*Complementary/ Alternative*	Policy convergence, in climate change policy only, would not address the problem of EU producers facing indirect carbon costs, which is a product of the EU's marginal pricing regime for electricity.
	Effectiveness	*Low*	
	Feasibility	*Low*	
Exemptions or Rebates	Relationship to EU CBAM		Not applicable.
	Effectiveness		
	Feasibility		
Credits and Compensation	Relationship to EU CBAM	*Alternative*	The indirect cost compensation mechanism described above has several advantages: it is an existing mechanism, and has the support of electro-intensive sectors as an effective means to prevent leakage and competitiveness impacts in the context of increased EU climate ambition; and it is dynamic – it will be revised in light of decarbonization of EU electricity production. But it is neither necessarily accurate in its calculation of costs, nor consistently applied across Member States. As an alternative to CBAM coverage of indirect emissions, it fails to price the most significant source of imported embedded carbon.
	Effectiveness	*Medium*	
	Feasibility	*High*	
Consumption Charges	Relationship to EU CBAM	*Alternative*	Domestic consumption charges, assuming they covered indirect emissions, would not address the problem of EU producers facing indirect carbon costs, which is a product of the EU's marginal pricing regime for electricity.
	Effectiveness	*Low*	
	Feasibility	*Medium*	

[3] As of the 2020 Carbon Market Report, 13 Member States had approved plans to compensate for indirect carbon costs, with more expressing an interest in doing so.

Option			Comments
Product Standards	Relationship to EU CBAM	*Complementary/ Alternative*	Product standards, assuming they covered indirect emissions, would not address the problem of EU producers facing indirect carbon costs, which is a product of the EU's marginal pricing regime for electricity.
	Effectiveness	*Low*	
	Feasibility	*High*	
Carbon Contracts for Difference	Relationship to EU CBAM	*Complementary*	Carbon contracts for difference, as normally constructed, would not cover the costs of EU producers facing indirect carbon costs, which is a product of the EU's marginal pricing regime for electricity.
	Effectiveness	*Low*	
	Feasibility	*High*	
RD&D Support	Relationship to EU CBAM	*Complementary*	RD&D support measures, such as innovation subsidies and pilot projects, to the extent that they reduce electricity consumption in industrial processes, or they reduce the caron content of electricity generation, will help lower indirect carbon costs. Note that some forms of industrial innovation, however, may pursue decarbonization by increasing rather than decreasing the electro-intensity of production. And dissemination of low-carbon electricity generation is not primarily limited by a lack of R&D.
	Effectiveness	*Medium/Low*	
	Feasibility	*High*	
Government Procurement	Relationship to EU CBAM	*Complementary*	Government procurement would not address the problem of EU producers facing indirect carbon costs, which is a product of the EU's marginal pricing regime for electricity. Government procurement can provide markets that help compensate somewhat for leakage due to indirect carbon costs.
	Effectiveness	*Medium/Low*	
	Feasibility	*High*	
Other: Reform of EU compensation for indirect costs	Relationship to EU CBAM	*Alternative*	Instead of extending CBAM coverage to indirect emissions, the EU could reform the state aid rules to stipulate that if aid is granted to address the risk of leakage due to indirect carbon costs, it must be calculated such that it compensates for the full premium paid by EU producers as a result of the marginal pricing for electricity. The calculation, though, would be complex, and the negotiations to amend state aid rules have just concluded and were difficult. Re-opening them would be no small project.
	Effectiveness	*High*	
	Feasibility	*Medium/Low*	

Discussion. As shown in the foregoing table, there are only a few policy options that address this gap. Maintaining the existing regime of indirect cost compensation—which is the route anticipated in the CBAM proposal—would be effective and would have the advantage of leaving an existing regime in place but would preclude covering indirect emissions under the CBAM. R&D spending, to the extent that it could help decarbonize the EU's electricity generation would be effective, but the most significant barriers to a decarbonized EU electricity grid are not addressed by increased R&D.

The most effective option would be reforming the process of compensation for indirect costs, such that it is consistently applied across all member states, and such that it accurately covers the full carbon cost increment imposed on EU producers by the EU's marginal pricing scheme for electricity.

This option—if accompanied by an effective prevention of resource shuffling—would allow indirect emissions to be covered under CBAM without subjecting electro-intensive producers to undue leakage risk. Recent reforms to the regime of indirect carbon cost compensation were only recently completed, and some Member States might be reluctant to re-open the discussion to make any further amendments.

3.4 Resource Shuffling and Avoidance Strategies

Take-aways. The risk of resource shuffling is probably best addressed through design elements within the CBAM: the use of national default values to determine embodied indirect emissions in imported goods (though it may risk trade challenges), or the delay of phase out of free allocation, giving time for the EU's electricity mix to substantially decarbonize. It could also be addressed by resort to consumption charges as an alternative to CBAM (though it would mean maintaining full free allocation).

In the short term, the risk of trans-shipment should be addressed by means of robust agreements with exempted countries to maintain systems of border control and charges on covered goods, and the inclusion in the CBAM of an anti-circumvention monitoring and enforcement mechanism focused on trans-shipment. In the longer term it can be addressed in amenable sectors by the use of product standards.

The risk of cost absorption should be addressed through existing trade remedy channels.

Gap Analysis. There are several ways that foreign producer behaviour might frustrate the objectives of the CBAM. One is resource shuffling, which occurs when clean foreign production is re-routed toward export to the EU, and dirty foreign production is sold elsewhere, leaving foreign production patterns ultimately unchanged. This challenge would be most acute if indirect emissions are covered under the CBAM, since indirect emissions are much more varied across global producers than are direct emissions, and since the shuffling in this case could simply be the assertion that the clean portion of a grid's generation mix was dedicated to the exporting producer. The existing proposal does not cover indirect emissions, but it is widely expected to do so in the future, at which point there would need to be provisions in place to address the risk of resource shuffling.

Another possibility is trans-shipment of goods. The proposal designates four countries and five territories exempt from the CBAM, since they have linked ETSs. The risk is that a non-exempt country exporter might ship covered goods to an exempt country, from which the goods could trans-shipped to the EU free of adjustment. The challenge is to ensure that exempted countries and regions adopt and effectively enforce a robust regime of import charges similar in effect to the CBAM.

A final possibility is a product of the fact that foreign producers of covered goods do not typically export 100% of their output to the EU. The smaller the proportion of output is exported to the EU, the more possible it might be for the producer to absorb the costs of the CBAM across the entirety of its production, lowering the price of EU-destined product to account for the CBAM costs, and in effect forcing its non-EU exports to cross-subsidize its EU exports. While this would be a poor long-term strategy, it might be employed in a strategic effort to maintain market share, or to force EU producers out of the domestic market with dumped products and predatory pricing.

Option			Comments
Policy Convergence	Relationship to EU CBAM	*Complementary/ Alternative*	To the extent that policy convergence eliminated foreign high-carbon producers, it would also eliminate some of the risk of strategic behaviour that unfairly secured preferential treatment for high-carbon products. Convergence among countries that applied a common BCA would also reduce the risk of trans-shipment through those specific countries. But achieving policy coherence is politically unlikely in the near & medium term.
	Effectiveness	*Medium/Low*	
	Feasibility	*Low*	
Exemptions or Rebates	Relationship to EU CBAM		Not applicable.
	Effectiveness		
	Feasibility		
Credits and Compensation	Relationship to EU CBAM		Not applicable.
	Effectiveness		
	Feasibility		
Consumption Charges	Relationship to EU CBAM	*Alternative*	If the consumption charges were elaborated such that they did not charge imports based on their actual carbon content, it would avoid the problem of resource shuffling. But that failure to discriminate fails to incentivize foreign producers to decarbonize, and risks being found at odds with environmental objectives in a WTO challenge. If consumption charges did not exempt any countries from tax liability, they would avoid the problem of trans-shipment. They could not address the problem of cost absorption.
	Effectiveness	*Medium/high*	
	Feasibility	*Medium*	
Product Standards	Relationship to EU CBAM	*Complementary/ Alternative*	If product standards covered indirect emissions (and they should), they would be exposed to the risk of resource shuffling .Since they would involve no country exemptions, they would eliminate the risk of trans-shipment. Since the standard would prevent the import of high-GHG goods at any price, it would avoid the risk of cost absorption.
	Effectiveness	*Medium/high*	
	Feasibility	*High*	
Carbon Contracts for Difference	Relationship to EU CBAM		Not applicable.
	Effectiveness		
	Feasibility		
RD&D Support	Relationship to EU CBAM		Not applicable.

Option			Comments
	Effectiveness		
	Feasibility		
Government Procurement	Relationship to EU CBAM		Not applicable.
	Effectiveness		
	Feasibility		

Discussion. There is no single policy option that addresses all the possible ways in which foreign producers might strategically frustrate the objectives of the CBAM. Resource shuffling, which would become salient if indirect emissions are eventually covered, could be prevented by the use of consumption charges as an alternative to CBAM, though they involve maintaining full free allocation. Resource shuffling is probably better addressed by design elements within the CBAM itself, such as the use of national default values to determine embodied indirect emissions in imported goods, or the delay of phase out of free allocation until after a successful testing period of co-existence, giving time for the EU's electricity mix to substantially decarbonize. The use of national default values for GHG intensity of production might also face trade law challenges.

Trans-shipment could be avoided by any regime that had no country-based exemptions, and both consumption charges and product standards would likely fit that bill. It could also be avoided by mandating the need for exempted countries to maintain systems of border control and charges on covered goods. It could also be avoided by means of a monitoring function within the CBAM itself that spotlighted surges of imports in covered goods from exempted countries, and a facility to block such trade.

Both consumption charges and product standards could prevent cost absorption. Cost absorption being essentially dumping, it might also be addressed by means of existing trade remedy law. This would be a more appropriate avenue than addressing the challenge via anti-circumvention procedures within the CBAM itself.

3.5 Setting Value Chain Threshold

Take-aways. Over the medium to long term, and as experience with technical and administrative processes of CBAM is increasingly gained, the EU and Member States should consider expanding CBAM's coverage to downstream products at risk of carbon leakage. In the short term, they can help limit the risk of shifting carbon leakage downstream in the value chain through developing/updating product standards, or providing compensation to downstream producers whose products are not covered by CBAM and are at risk of carbon leakage to a level equal to the passed-through carbon costs of covered upstream input materials.

Gap Analysis. The proposed CBAM covers a limited set of four basic material sectors – cement, nitrogen fertilizers, iron and steel, and aluminum – as well as electricity. Within these sectors (other than electricity), coverage extends down the value chain to create a total of 29 proposed covered categories of goods. There is a provision for a review in 2026 of the sectors covered, and of the downstream coverage within those sectors, with a view to potentially expanding the list of covered goods. The limited proposed coverage both sectorally and down the value chain results in an instrument that is technically and administratively relatively feasible. It also means that the choice of sectoral/product scope in and of itself will likely not face legal challenges, and will not give rise to significant political or diplomatic controversy. However, some of the covered sectors (aluminium, steel) have complex downstream value chains in which trading is dominated by semi-finished and finished products, not all of which are included in the proposed list of covered goods (Annex I of the proposed regulation). Where these products contain a high share of the carbon-intensive raw material and the processing results in limited value-added, exclusion from the coverage of a CBAM may render them vulnerable to substitution by imported products at the same level in the value chain. There are few policy options that can help limit the risk of shifting carbon leakage downstream in the value chain.

Option			Comments
Policy Convergence	Relationship to EU CBAM	*Complementary/ Alternative*	Policy convergence through harmonization of domestic carbon prices and climate policy more generally can effectively limit the risk of shifting carbon leakage downstream in the value chain. However, policy convergence achievement is costly and politically unlikely in the near & medium term.
	Effectiveness	*High*	
	Feasibility	*Low*	
Exemptions or Rebates	Relationship to EU CBAM		Not applicable
	Effectiveness		
	Feasibility		
	Relationship to EU CBAM	*Complementary/ Amendment*	Carbon cost compensation of downstream producers whose products are at risk of carbon leakage and not covered by

Option			Comments
Credits and Compensation	Effectiveness	*Medium/High*	CBAM equal to the passed-through carbon costs of covered upstream input materials, can effectively address the risk of shifting carbon leakage downstream in the value chain. However, such compensation risks being challenged as a subsidy and would be complicated to administer.
	Feasibility	*Medium/Low*	
Consumption Charges	Relationship to EU CBAM	*Alternative*	Consumption charges can effectively address the risk of shifting carbon leakage downstream in the value chain, as they are a means to ensure that the cost of carbon is internalized along the entire supply chain of key basic materials and that it can reach the consumer. Such charges would apply to all covered like to like products placed on the EU market, regardless of whether these are imported or produced domestically. However, administrative implementation of consumption charges is technically demanding.
	Effectiveness	*High*	
	Feasibility	*Medium/Low*	
Product Standards	Relationship to EU CBAM	*Complementary/ Alternative*	Product standards for downstream products can effectively address the risk of shifting carbon leakage downstream in the value chain, as they set direct requirements for both imported and domestically produced products. They may also indirectly promote a convergence towards adopting low-carbon production processes globally. However, the feasibility of this option might be somewhat compromised by the large number of downstream products for which standards would need to be developed or updated.
	Effectiveness	*Medium/High*	
	Feasibility	*Medium/High*	
Carbon Contracts for Difference	Relationship to EU CBAM		Not applicable.
	Effectiveness		
	Feasibility		
RD&D Support	Relationship to EU CBAM		Not applicable.
	Effectiveness		
	Feasibility		
Government Procurement	Relationship to EU CBAM	*Complementary*	The use of low-carbon criteria for the purchase by governments of products down the value chain can stimulate the internalisation of carbon costs within public procurement decisions. Any imported dirtier downstream products not
	Effectiveness	*Medium*	

Option			Comments
	Feasibility	*High*	covered by CBAM would in this case not enjoy a competitive advantage vis-a-vis comparable cleaner products that are either domestically produced or imported. Moreover, green government procurement can indirectly help scale up deployment of low-carbon production methods, helping drive down their cost. However, public procurement only represents a fraction of total demand for such products.
Other: Expanding CBAM downstream coverage	Relationship to EU CBAM	*Amendment*	Expanding the list of goods covered by CBAM (Annex I of the proposed regulation) to encompass greater downstream coverage, and allowing CBAM to cover embodied carbon in covered input goods, would directly address the risk of shifting carbon leakage downstream in the value chain. However, expanding the product coverage might result in an instrument that is technically and administratively more complex, and that might face legal challenges, and political or diplomatic controversy.
	Effectiveness	*High*	
	Feasibility	*Medium/Low*	

Discussion. As shown in the foregoing table, most options that offer the most effective protection against the risk of shifting leakage downstream in the value chain entail a trade-off between the degree of their effectiveness and feasibility. Product standards for downstream products are an exception as they can effectively address this risk, while being fairly feasible. Alternative policies, such as consumption charges, could allow a more robust solution to the challenge, but are hampered by limited feasibility in administrative, legal, or political terms. Providing rebates or compensation to downstream producers whose products are not covered by CBAM and are at risk of carbon leakage to a level equal to the passed-through carbon costs of covered upstream input materials, can effectively address the risk of shifting carbon leakage downstream in the value chain, however, they risk being found to be subsidies under trade law (though a similar scheme for compensation of indirect carbon costs (see Section 3.3) has not yet been challenged). Expanding CBAM's downstream coverage would be highly effective but might increase the complexity of the instrument, which might not be warranted at the very outset of its implementation.

3.6 Impacts on Developing Countries & LDCs

Take-aways. Over the long term, the EU and Member State governments should continue diplomatic efforts with trade partners, including capacity building and technical assistance efforts with developing countries, to achieve greater convergence of climate policy ambition, uniform standards for the measurement of emissions, and comparable explicit and implicit CO_2 prices that would minimize administrative burden. In the short and medium term, they can help alleviate negative impacts on development and increase political acceptance of CBAM abroad through providing targeted support to CBAM-exposed developing countries (through either direct CBAM revenue recycling or other EU funds) to support them in their decarbonisation processes, as well as in the build-up of institutional capacities.

Gap Analysis. Many of the EU's trading partners in developing countries have raised concerns that the EU CBAM would curtail their exports, thereby potentially impeding their development. The exposure and vulnerability of developing countries to CBAM would inter alia depend on their (current and future) emissions intensity in covered sectors, their exports' structure including their degree of dependency on the EU market and their ability to adapt by trade diversification and shifting, as well as institutional readiness and capacities to monitor and report product emissions. The UNFCCC principle of common but differentiated responsibilities and respective capabilities (CBDR-RC) is a legitimate concern, in particular for Least-Developed Countries (LDCs) and Small Island Developing States (SIDSs), that may warrant affording these countries special treatment to avoid negative impacts on their development.

Yet, the proposed CBAM sets out no exemptions from its geographic scope for LDCs and SIDSs, with the rationale for not doing so being threefold: 1) from an effectiveness and administrative point of view, any blanket exemption creates real risks of perverse strategic shifts in trade patterns and trans-shipment; 2) from a legal point of view, any exemption of individual countries or groups of countries risks violating Article I of the GATT; 3) very few exports from LDCs and SIDSs are impacted under the initially proposed CBAM. Negative impacts on development would be better addressed through revenue sharing, however, the proposed CBAM regulation does not provide any principles or provisions regarding the use of revenues for climate-related purposes abroad either, in line with prior political direction that revenues accrue to the general EU budget. While this could be subject to amendments in the final regulation complementary flanking measures can help limit impacts on developing countries.

Option			Comments
Policy Convergence	Relationship to EU CBAM	*Complementary/ Alternative*	Policy convergence through harmonization of domestic carbon prices and climate policy more generally encompassing medium and long-term emissions reduction targets can effectively limit carbon lock-in in developing countries and therefore reduce their exposure to CBAM in the longer term. Moreover, convergence with respect to uniform standards for the measurement of emissions, and of comparable explicit and implicit CO2 prices in energy and industrial sectors would minimize administrative burdens. However, policy convergence achievement is costly and politically unlikely in the near & medium term. It would be a demanding and unfair request for developing countries, unless there is supporting assistance.
	Effectiveness	*Medium*	
	Feasibility	*Low*	
Exemptions or Rebates	Relationship to EU CBAM	*Amendment*	Exemptions for LDCs and SIDSs from the CBAM geographic scope can effectively address CBDR-RC concerns but would create real risks of perverse strategic shifts in trade patterns and trans-shipment, and risks violating Article I of the GATT. Other ways to address this are being mentioned.
	Effectiveness	*Medium/High*	
	Feasibility	*Medium*	
Credits and Compensation	Relationship to EU CBAM	*Complementary/ Amendment*	Compensation to CBAM-exposed developing and least-developed countries would be difficult as part of the CBAM itself and would involve violating the tax principle of no hypothecation of funds. There is a need for targeted and substantial policies of support outside the CBAM, with the proviso that they must be additional to existing support.
	Effectiveness	*Medium/High*	
	Feasibility	*Medium/High*	
Consumption Charges	Relationship to EU CBAM	*Alternative*	Domestic consumption charges as an alternative to a 'notional' ETS for exporters have per se no direct effect on addressing negative impacts on development/CBDR-RC concerns. Consumption charge revenues (like revenues from the currently proposed 'notional' ETS CBAM) could be recycled to developing country governments and producers. Administrative implementation of consumption charges is technically demanding.
	Effectiveness	*Medium/Low*	
	Feasibility	*Medium/Low*	
Product Standards	Relationship to EU CBAM		Not applicable.
	Effectiveness		
	Feasibility		
Carbon Contracts for Difference	Relationship to EU CBAM		Not applicable.
	Effectiveness		
	Feasibility		

Option			Comments
RD&D Support	Relationship to EU CBAM		Not applicable.
	Effectiveness		
	Feasibility		
Government Procurement	Relationship to EU CBAM		Not applicable.
	Effectiveness		
	Feasibility		
Other: targeted additional support	Relationship to EU CBAM	*Complementary/ Amendment*	Negative impacts on development and the concern of CBDR-RC would be effectively addressed through targeted additional support including bilateral assistance. This could be funded either within the CBAM itself through direct CBAM revenue recycling or through other EU funds being channelled to address impacts. This can support countries in their decarbonisation processes by accelerating the diffusion and uptake of low-carbon processes by developing country producers, as well as in the build-up of institutional capacities. The achievement of this would either entail revisiting prior political direction that CBAM revenues accrue to the general EU budget (in the case of direct CBAM revenue recycling) or other political agreement to increase other EU funds channelled to LDCs. The CBAM political process so far indicates an appetite for doing so.
	Effectiveness	*Medium/High*	
	Feasibility	*Medium/High*	

Discussion. As shown in the foregoing table, most policy options do not address concerns with respect to impact on developing countries, while some of them while not directly applicable might even exacerbate developing countries' vulnerability to CBAM of as they indirectly exacerbate the emissions intensity gap between domestic producers and developing country producers (e.g. CCfDs or RD&D support in the EU). Exemptions from the geographical scope of CBAM for LDCs would address the concern but are at the same time limited in feasibility as they raise legal and circumvention risks. The option that most effectively alleviates negative impacts on development/CBDR-RC concerns while at the same time increase political acceptance of CBAM abroad relate to the provision of targeted support, including capacity building and technical assistance, to CBAM-exposed developing countries (through direct CBAM revenue recycling or through other EU funds).

3.7 International Cooperation on CBAM

Take-aways. If adopted, the CBAM will be born into an already dense landscape of climate rules and procedures, adding compliance obligations for importers and foreign producers, as well as new administrative burdens for EU and Member State authorities. Administrative and transaction costs can be lowered, and with them concurrent political and legal risks, if the EU, other countries pursuing border adjustments, and potentially affected trade partners enter into a dialogue and reach an understanding on principles and best practices of BCA design and implementation. Such a dialogue could build on existing cooperative platforms, and draw inspiration from previous initiatives to harmonize national approaches to border adjustments.

Gap Analysis. As proposed, the CBAM regulation and future implementing and delegated acts will set out complex technical requirements and processes, making compliance demanding for importers and foreign producers as well as regulators. Many trade partners already have introduced their own policy and institutional frameworks for emissions monitoring, reporting and verification (MRV) and product carbon footprint determination, which may deviate from the requirements under the CBAM. At the same time, several jurisdictions are discussing their own Border Carbon Adjustments (BCAs), which would adjust for the domestic climate policies in place in those jurisdictions and thus depart – in some cases potentially dramatically – from the design of the EU CBAM. Proliferation of different approaches to border adjustments and MRV more generally has the potential of increasing administrative burden and implementation costs, and can contribute to political and legal risk of the CBAM. At a minimum, active outreach and communication – potentially coupled with strategic use of CBAM revenue – can help avert the gravest legal and political risks as well as capacity constraints among trade partners, although more far-reaching international cooperation on principles and practices can further improve the design of the CBAM and ease political and legal concerns about its implementation.

Option			Comments
Policy Convergence	Relationship to EU CBAM	*Complementary*	By leveling the playing field for EU exporters and foreign producers, policy convergence through harmonization of domestic carbon prices and climate policy more generally can effectively limit emissions leakage related to EU exports, but its achievement is politically unlikely in the near & medium term
	Effectiveness	*High*	
	Feasibility	*Low*	
Exemptions or Rebates	Relationship to EU CBAM		Not applicable
	Effectiveness		
	Feasibility		
	Relationship to EU CBAM		Not applicable

Option			Comments
Credits and Compensation	Effectiveness		
	Feasibility		
Consumption Charges	Relationship to EU CBAM		Not applicable
	Effectiveness		
	Feasibility		
Product Standards	Relationship to EU CBAM		Not applicable
	Effectiveness		
	Feasibility		
Carbon Contracts for Difference	Relationship to EU CBAM		Not applicable
	Effectiveness		
	Feasibility		
RD&D Support	Relationship to EU CBAM		Not applicable
	Effectiveness		
	Feasibility		
Government Procurement	Relationship to EU CBAM		Not applicable
	Effectiveness		
	Feasibility		
Other: Multilateral Dialogue on BCAs	Relationship to EU CBAM	*Complementary*	Collaboration on principles and best practice can help improve CBAM design and implementation, reduce administrative cost, and lower political and legal risk. Unlike efforts to achieve convergence of climate policy ambition, a multilateral dialogue on BCAs could seek harmonization of technical aspects and lead to a range of useful outcomes with varying levels of formality and integration, making such a dialogue politically much more feasible
	Effectiveness	*Medium-High*	
	Feasibility	*Medium-High*	

Discussion. In order to foster cooperation on BCA design and implementation, the EU can work with strategic and trade partners to initiate a policy dialogue to allow an open exchange of views, build mutual understanding, and identify criteria to guide policy development. Such a dialogue can focus on identifying common principles for BCA design and implementation, such as the objectives pursued with BCAs, how to share revenue collected with the BCA, whether and how to

factor in climate policy exemptions, rebates or credits benefitting domestic producers and climate policy costs borne by foreign producers, and the need for a transparent, inclusive and fair process. Additionally, such a dialogue could foster convergence on best practices in areas such as BCA coverage and value chain thresholds, or determination of carbon embodied in traded goods (Cosbey, 2021). Ideally, such a dialogue will take place at a multilateral level and include both jurisdictions implementing BCAs, such as the EU, and trade partners potentially affected by the BCAs. Existing venues and fora, such as the WTO Committee on Trade and Environment, or the recently launched Trade and Environmental Sustainability Structured Discussions (TESSD), could provide a platform for such a dialogue, and past initiatives – such as the GATT Working Party on Border Tax Adjustments – might serve as a template. Importantly, however, such a dialogue on BCA cooperation will take time to reach useful outcomes, and – given the rapid pace of climate policy developments in the EU and some other jurisdictions – should not be a condition for jurisdictions to proceed with the development of their BCAs, as that could slow down climate ambition more generally.

4. Take-aways

The proposed CBAM needs to be part of a complex architecture of related regulations, institutions and initiatives. It needs to be a piece in jigsaw puzzle, that is, it needs to be complemented by flanking policies that complement its strengths, and others that help bridge important gaps and that cannot be addressed, or are addressed in a more effective way through measures outside the proposed CBAM itself.

This report has surveyed a suite of policy options that lie outside the design of the CBAM itself, assessing the potential for them to help the CBAM achieve its objectives. This picture paints the picture of a jigsaw puzzle that will evolve over time, as the impact of asymmetrical climate change policies is better understood, as policies change and as the societal environment itself changes. This may include a better recognition in international trade rules of the need to address climate change which is an existential problem, and may require special consideration or interpretation under trade rules.

There are several complementary policies that could help mitigate the **potential loss of export markets** under the CBAM. It is important to mention, as detailed in Marcu et al. 2021c, that sectors are different and that the CBAM may need to be adapted – while accepting the fact that there cannot be different CBAMs for different sectors. There are also options that involve revising the proposed CBAM itself, through different design elements; though these are not the subject of this report, they merit further exploration. In the short and medium terms, complementary policies include supporting low-carbon innovation and investment via instruments like carbon contracts for difference, RD&D subsidies, domestic product standards and targeted green government procurement. In the longer term, the EU and Member State governments should prioritize diplomatic efforts with trade partners to achieve greater convergence of climate policy ambition. For the long-term viability of a CBAM, reform of trade rules is something that should be on the table.

In the immediate short-term, if we want to make CBAM operational, it is difficult to see how indirect emissions can be included in the CBAM. The EU should reform the existing regime for compensation for indirect costs. such that it is more consistently applied across the Member States, and such that it accurately reflects the full carbon cost increment imposed on EU producers by the EU's marginal pricing scheme for electricity

However, in the mid to long-term it will become inevitable to include indirect costs in the CBAM coverage.

Resource shuffling needs to consider both the spirit and letter of the Paris Agreement. The risk of **resource shuffling** should be addressed by design elements within the CBAM: the use of national default values to determine embodied indirect emissions in imported goods, or the delay of phase out of free allocation until after a successful testing period of co-existence, giving time for the EU's electricity mix to substantially decarbonize. It could also be addressed by resorting to consumption charges as an alternative to CBAM, though that instrument is conditional on the need to maintain full free allocation.

In the short term, the risk of **trans-shipment** should be addressed by means of agreements with exempted countries to maintain systems of border control and charges on covered goods, and the inclusion within the CBAM of an anti-circumvention monitoring and enforcement mechanism focused on trans-shipment. In the longer term it can be addressed in amenable sectors by the use of product standards.

The risk of **cost absorption** should be addressed through existing trade remedy channels.

The EU and Member States should consider expanding CBAM's **downstream product coverage** over the medium to long term. In the short term, they can help limit the risk of shifting carbon leakage downstream in the value chain through developing/updating product standards, or providing compensation to downstream producers whose products are not covered by CBAM and are at risk of carbon leakage.

Over the long term, the EU and Member State governments should continue diplomatic efforts with trade partners including developing countries to achieve greater convergence of climate policy ambition, uniform standards for the measurement of emissions, and comparable explicit and implicit CO_2 prices that would minimize administrative burden.

In the short and medium term, they can help alleviate negative impacts on development and increase political acceptance of CBAM abroad through **providing targeted support to CBAM-exposed developing countries,** especially SIDSs and LDCs.

If adopted, the CBAM will be born into an already dense landscape of climate rules and procedures, adding compliance obligations for importers and foreign producers, as well as new administrative burdens for EU and Member State authorities.

Administrative and transaction costs can be lowered, and with them concurrent political and legal risks, if the EU, other countries pursuing border adjustments, and potentially affected trade partners enter into a dialogue and reach an understanding on principles and best practices of BCA design and implementation. Such a dialogue could build on existing cooperative platforms and draw inspiration from previous initiatives to harmonize national approaches to border adjustments.

One additional issue needs to be mentioned. If the asymmetry in climate change continues and it becomes more acute as we move to stricter targets, there may be too many moving parts to be juggled at the same time. This would militate for different national instruments to drive decarbonization and revisiting the viability of current, and/or working harder for a linked or networked carbon market at the global level.

5. References

Bataille, Chris, Céline Guivarch, Stephane Hallegatte, Joeri Rogelj, and Henri Waisman. 'Carbon Prices across Countries'. Nature Climate Change 8, no. 8 (1 August 2018): 648–50. https://doi.org/10.1038/s41558-018-0239-1.

Cosbey, Aaron. 2021. "Principles and Best Practice in Border Carbon Adjustment: A modest proposal." *Trade and Sustainability Review*, Vol. 1(4), November. https://www.iisd.org/articles/principles-border-carbon-adjustment-modest-proposal

European Commission (2021). Proposal for a Regulation of the European Parliament and of the Council Establishing a Carbon Border Adjustment Mechanism, COM(2021) 564 final, 14 July 2021. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021PC0564&qid=1629724352616

Marcu, Andrei, Michael A. Mehling, Aaron Cosbey and Alexandra Maratou (2021a). Guide to the European Border Carbon Adjustment Mechanism, European Roundtable on Climate Change and Sustainable Transition, Brussels. https://ercst.org/ercst-guide-to-the-eu-cbam/.

Marcu, Andrei, Michael A. Mehling, and Aaron Cosbey (2021b). Border Carbon Adjustments in the EU: A Policy Proposal, European Roundtable on Climate Change and Sustainable Transition, Brussels. https://ercst.org/border-carbon-adjustments-in-the-eu-a-policy-proposal.

Marcu, Andrei, Michael A. Mehling, and Aaron Cosbey (2021c). Border Carbon Adjustments in the EU: Sectoral Deep Dive, European Roundtable on Climate Change and Sustainable Transition, Brussels. https://secureservercdn.net/160.153.137.163/z7r.689.myftpupload.com/wp-content/uploads/2021/03/20210317-CBAM-II_Report-I-Sectors.pdf

Marcu, Andrei, Michael A. Mehling, and Aaron Cosbey (2020). Border Carbon Adjustments in the EU: Issues and Options, European Roundtable on Climate Change and Sustainable Transition, Brussels. https://ercst.org/border-carbon-adjustments-in-the-eu-issues-and-options.

Neuhoff et al (2016). Inclusion of Consumption of carbon intensive materials in emissions trading – An option for carbon pricing post-2020, Climate Strategies, https://climatestrategies.org/wp-content/uploads/2016/10/CS-Inclusion-of-Consumption-Report.pdf

Rissman, Jeffrey, Chris Bataille, Eric Masanet, Nate Aden, William R. Morrow, Nan Zhou, Neal Elliott, et al. 'Technologies and Policies to Decarbonize Global Industry: Review and Assessment of Mitigation Drivers through 2070'. Applied Energy 266 (15 May 2020): 114848. https://doi.org/10.1016/j.apenergy.2020.114848.