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European Union's carbon border adjustment mechanism addressing carbon leakage

Influence on Finnish foreign trade

International Business

Master's thesis

Turku School of Economics

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The European Union (EU) aims to become the first carbon-neutral continent by 2050. To achieve this, the union has adopted ambitious climate legislation, which includes the first large-scale emissions trading system in action in the world. However, different levels of climate ambition across countries pose a risk of carbon leakage. To address carbon leakage, the EU is setting up a carbon border adjustment mechanism (CBAM). This will be the first of its kind globally. Its influence on small and export-dependent member states such as Finland calls for a closer examination, particularly in terms of competitiveness.

The aim of this study is to explore how does the implementation of the EU's CBAM influence Finnish foreign trade. This question is approached by first establishing a theoretical framework on the role of trade policy in climate change mitigation, carbon leakage and the academic debate on the mechanism. A qualitative approach is adopted, as it allows EU CBAM to be examined within its complex and trade policy context. The empirical data for the study is collected through expert interviews, which are complemented by secondary data. The collected data is analysed using thematic analysis. This makes it possible to see the influence of the mechanism on Finland's foreign trade in the light of most recent knowledge on the mechanism.

The results suggest that the implementation of the carbon border mechanism may have unexpected effects on the competitive position of Finnish companies, which may have negative implications for Finland's exports. This is related to increasing reporting requirements for companies, differences in the level of implementation between Member States and differences in state aid policy. In addition, the trade policy reactions of the EU's trading partners to the mechanism could pose a risk to Finland's foreign trade. The Commission's new Omnibus initiative aimed at simplifying regulation would, if implemented, address some of the problems identified. If it is decided to extend EU CBAM from its current scope, it is important to ensure a gradual transition based on comprehensive impact assessments to which all member states can commit.

Key words: CBAM, European Union, carbon leakage, Finnish foreign trade

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Euroopan unionin (EU) tavoitteena on olla ensimmäinen hiilineutraali maanosa vuoteen 2050 mennessä. Tavoitteen saavuttamiseksi EU on ottanut käyttöön ilmastotavoitteiden kannalta kunnianhimoista lainsäädäntöä, kuten ensimmäinen laajamittainen päästökauppajärjestelmän. Riskinä eri valtioiden ilmastopolitiikan kunnianhimon tasojen erotessa toisistaan kuitenkin on olemassa hiilivuoto EU:sta. Ehkäistäkseen hiilivuotoa tehokkaammin EU on ottamassa käyttöön hiilirajamekanismin ensimmäisenä maailmassa. Sen vaikutusta Suomen kaltaisiin pieniin viennistä riippuvaisiin jäsenvaltioihin on syytä tarkastella tarkemmin erityisesti kilpailukyvyn kannalta.

Tämän pro gradu -tutkielman tavoitteena on selvittää, miten Euroopan unionin hiilirajamekanismi tulee vaikuttamaan Suomen ulkomaankauppaan. Tätä kysymystä lähestytään muodostamalla ensin teoreettinen viitekehys kauppapolitiikan roolista ilmastonmuutoksen ehkäisemisessä, hiilivuodosta ja itse mekanismista. Tutkimus toteutetaan laadullisena, sillä se mahdollistaa hiilirajamekanismin tutkimisen osana sen monitahoista ja kaupallispoliittista kontekstia. Tutkimuksen empiirinen aineisto kerätään asiantuntijahaastattelussa, jota täydennetään sekundääriaineistolla. Kerätty aineisto analysoidaan temaattisen analyysin keinoin. Näin on mahdollista tarkastella, mekanismin vaikutuksia Suomen ulkomaankauppaan tuoreimman mekanismia koskevan tiedon valossa.

Tulosten mukaan hiilirajamekanismin käyttöönotolla voi olla odottamattomia vaikutuksia suomalaisten yritysten kilpailuasetelmiin, mikä voi negatiivisesti heijastua Suomen vientiin. Tämän taustalla on yritysten kasvavat raportointivelvoitteet, erot toteutuksen tasossa jäsenvaltioiden välillä ja erot valtiontuki-politiikassa. Lisäksi riskinä Suomen ulkomaankaupalle on EU:n kauppakumppaneiden kauppoliittiset reaktiot mekanismiin. Komission uusi sääntelyn yksinkertaistamiseen tähtäävä Omnibus-aloite vastaisi toteutuessaan osaan havaituista ongelmista. Mikäli hiilirajamekanismia päädytään laajentamaan, on tärkeää varmistaa asteittainen ja kattaviin vaikutusarviointeihin perustuva siirtymä, johon kaikki jäsenvaltiot pystyvät sitoutumaan.

Key words: hiilirajamekanismi, Euroopan unioni, hiilivuoto, Suomen ulkomaankauppa

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LIST OF FREQUENTLY USED ABBREVIATIONS

CO ₂	carbon dioxide
EU CBAM	European Union's Carbon Border Adjustment Mechanism
EU	European Union
EU ETS	European Union Emission Trading System
ETS	Emissions trading system
GDP	Gross domestic product
GHG	Greenhouse gases
IPCC	Intergovernmental Panel on Climate Change
SMEs	Small and medium-sized enterprises
USD	United States dollar
UNFCCC	The United Nations Framework Convention on Climate Change
WTO	World Trade Organization

1 Introduction

1.1 Climates policy differences behind EU CBAM

Climate change stands as one of the most pressing problems of our time. Its impacts are adverse and severe, affecting ecosystems, economies and communities worldwide. Without immediate and significant emissions reductions, limiting global warming to 1.5°C or even 2°C will be beyond reach. Surpassing these limits would most definitely lead to profound and potentially irreversible changes to our planet. (IPCC 2023, 42.) Global awareness of the serious consequences of climate change is growing and progress has been made both at national and global level on climate change prevention. For instance, in The United Nations Framework Convention on Climate Change (UNFCCC), Kyoto Protocol, and Paris Agreement, countries have come together to agree on the necessity to increase national ambition and develop climate policies. Climate change mitigation efforts have resulted into a decline in energy and carbon intensity globally. Some countries have even achieved lasting greenhouse gas emissions (GHG) reductions. (IPCC 2023, 52-53.)

Despite increased policies and laws targeted to climate change mitigation, global net GHG emissions have increased since 2010, covering all major sectors. The current mitigation commitments and the level of their implementation are not sufficient to limit global warming. If the global ambition mitigating climate change does not increase, it is likely that 1.5°C increase is reached during the 21st century. (IPCC 2023, 44, 53, 57.) To prevent global warming from exceeding critical limits, a coordinated, fast and preferably immediate acceleration of climate action is essential. This requires strengthened mitigation measures across all sectors, including energy, transportation and industry, with a focus on deep and rapid reduction of GHG emissions to achieve net-zero CO₂ targets. A transition from fossil fuels to low- or zero-carbon energy sources supported by demand-side measures and improved energy efficiency are vital in this. (IPCC 2023, 44, 53, 57, 82-86.) However, a globally coordinated strategy for effectively limiting greenhouse gas emissions seems unlikely in the upcoming years (Hecht & Peters 2018, 94).

The European Union (EU) can be seen to have taken a leadership role in global climate action through its ambitious climate policies. The EU has committed to remarkable GHG emission reductions in the form of the Green Deal, including a 55% reduction by 2030 compared to 1990 levels and carbon neutrality by 2050. The EU has been working to make these targets a reality by adapting its legislation in line with the Fit for 55 policy proposals. (European Commission 2024a, 8.) While there has been discussion about whether the EU has the capacity to reach the long-term

policy goals, it can be recognized that the EU has taken significant steps in its climate policy in a relatively short time (Rayner et al. 2023, 384). The new European Commission, which commenced its mandate in December 2024, under the leadership of Ursula von der Leyen's second term, appears to have reoriented its priorities toward competitiveness and defence, placing less emphasis on climate issues and the green transition. However, despite these changing priorities, the Commission has emphasized that it remains committed to the climate targets outlined in the Green Deal and is not going to retreat from its established environmental commitments. (FIIA 2024, 3-5.)

A key element of the EU's climate policy to meet its climate targets is the EU Emissions Trading System (EU ETS). It supports the EU to meet its climate targets by creating a market mechanism that puts a price on GHG emissions and thus encourages companies to reduce their GHG emissions. (European Commission 2022, 16, 26.) As there is no common global carbon market or price for carbon emissions, concern arises about carbon leakage, which involves domestic companies shifting their carbon-intensive production from regions with higher carbon prices to those with less stringent emission regulations (Antoci et al. 2021, 1-2; Jakob 2021, 609). Such development would significantly weaken the effectiveness of the EU's and global climate initiatives (European Commission 2024a, 7). To prevent companies from moving their energy-intensive production abroad in sectors at risk of carbon leakage, the EU ETS is offering free emission allowances (Jakob 2021, 611). Yet, the EU is gradually shifting towards auctioning allowances and the free allocation for less exposed sectors is being phased out by 2030 (European Commission 2024b). With the EU's goal of achieving net-zero emissions soon, there likely will not be enough permits to ensure fair competition for all firms at risk of carbon leakage in the future (Jakob 2021, 611).

To address carbon leakage more effectively, the EU has decided to adopt a new approach by incorporating measures to mitigate climate change into its trade policy. On July 14th 2021, the EU proposed the EU Carbon Border Adjustment Mechanism (CBAM), marking a historic milestone as the world's first carbon tariff regulation. The core of the proposal was to safeguard the EU's ambitious climate goals by preventing the relocation of carbon-intensive production activities beyond its borders, i.e. carbon leakage. CBAM will act as a tool to level out the price of carbon emissions produced in the carbon intensive industries between products originating from the EU's internal market and imports to the EU from third countries. This is achieved by applying CBAM certificates, informally referred to as carbon tariffs, on carbon-intensive imports from countries that do not have a national emissions trading scheme in place similar to EU ETS. Carbon tariffs are expected to prevent businesses from relocating their carbon-intensive production to third countries

purely in the hope of cutting costs from not having to comply with stringent climate regulations. (European Commission 2021.)

The CBAM will be phased in gradually. The transitional phase started on October 1st 2023 and the first reporting period for importers ended at the end of January 2024. Since then, CBAM declarants have been required to submit their reports in every quarter until the transitional phase ends. The final system enters into force in the beginning of 2026, when the actual carbon tariffs, i.e. CBAM certificates, will be introduced. (European Commission 2024b.) Thus, there is still little research on the actual impact of CBAM on business and international trade. Additionally, it remains to be seen how impactful CBAM will be preventing carbon leakage between the EU and its trade partners. Existing literature has suggested that border carbon adjustments have potential to cut carbon leakage approximately in half in energy-intensive and trade-exposed sectors by establishing a level playing field (Branger & Quirion 2014, 36).

The CBAM has effects on foreign trade of EU member states, as it places a price on the carbon emissions embedded in imported CBAM goods. This may lead to shifts in competitive dynamics both between the EU and third countries, as well as within the EU internal market. One key issue is that with the introduction of CBAM, the current support for exports provided by free allocations under the EU ETS is phased out and no such support is planned to be replaced under the EU CBAM. (Joussemaume et al. 2021, 3.) After its release, EU CBAM has attracted criticism from the European Unions' trading partners which have questioned its fairness and potential use as a protectionist trade instrument (Sapir & Horn 2020, 12). If other countries perceive the carbon mechanism as protectionist, the result could be countermeasures against the European Union or even a trade war. This could have a drastic negative effect on the foreign trade of EU member States. (Kuusi et al. 2020, 21.).

Examining the potential effects of the carbon border mechanism on Finland's foreign trade is relevant for several reasons. It is often recognized that as a small open economy, Finland is dependent on global markets and foreign trade. Through foreign trade and the domestic value added by exporting, the Finnish economy has been able to grow to its current size. (Haaparanta et al. 2017, 15, 53.) Even today, Finland's economic growth relies on the ability of Finnish exporters to effectively compete globally. This, in turn, is strongly linked to the global cost competitiveness of Finnish companies and their ability to invest in RDI. (Kotamäki & Lumme 2023.) It is therefore important to explore how CBAM is going to influence Finnish foreign trade and the competitiveness of the Finnish companies, given Finland's dependence on foreign trade.

It is not clear yet how CBAM can contribute to supporting Finnish companies in international competition by addressing carbon leakage and creating a level playing field. The possible retaliation measures and the tensions rising could be significant risk considering Finland's dependency on foreign trade (Amendola 2025, 11). Increasing protectionism could significantly hamper Finnish exports, especially for small and medium-sized enterprises and reduce the value added to Finland from exports (Haaparanta et al. 2017, 121). Moreover, rising uncertainty in the market could result in fewer investments research and innovation by Finnish companies, as well as increase their financing costs due to higher risk premiums on corporate finance (Silvo & Juhonen 2025).

1.2 Purpose and structure of the study

This thesis focuses on exploring the influence of the EU's carbon border adjustment mechanism on Finnish foreign trade. The main question is: *“How does the implementation of the European Union's Carbon Border Adjustment Mechanism influence Finnish foreign trade?”* The main research question is approached through the following sub-questions:

- How can trade policy promote a green transition globally?
- How has CBAM changed EU trade policy?
- How can possible adverse effects of CBAM on the competitiveness of companies be mitigated?

The first sub-question sets out why trade policy can and should be used to mitigate climate change in addition to traditional trade policy objectives. The sub-question leads to the introduction of trade policy instruments that facilitate the green transition globally, thus providing a background for understanding the CBAM as part of the trade policy framework for green transition. In this study, green transition is understood as a systemic shift towards an ecologically sustainable economy with the aim to deliver economic development opportunities while reducing the reliance on fossil fuels and promoting social welfare (Minardi 2023, 1-2). The first sub-question also offers context to the EU's decision to introduce its own CBAM.

The second sub-question deals with the change that the EU CBAM has brought to EU trade policy. The EU CBAM is a new instrument that combines the EU's climate policy and trade policy competences. By examining the changes CBAM brings to EU's trade policy, such as carbon pricing on certain types imported goods and shifts in competitiveness and trade with non-EU countries, it is easier to understand how CBAM will affect EU member state such as Finland, which has delegated its trade policy powers to the EU. To answer this sub-question, it is also essential to clarify how the EU CBAM is designed and how it will be implemented.

The third sub-question examines, how CBAM could be modified and designed to support and maintain competitiveness of European businesses. It is recognized that the sole purpose of the CBAM is not to support the competitiveness European companies, instead the main purpose of the instrument is to address carbon leakage. However, some authors, such as Zhong & Pei (2022, 10-11) argue that addressing carbon leakage profoundly requires supporting the competitiveness of companies to be effective. As the Commission is still very likely to make adjustments to the instrument, it would be good to better understanding of how its effectiveness could be improved without leading to outright protectionism. Lastly, it should be noted that competitiveness can be defined in various ways depending on the context. In this study, competitiveness is understood as companies' ability to maintain and grow their market share (Carbone & Rivers 2017).

To address these questions, a literature review will first be carried out. As a topic, CBAM is a practical and contextual subject and therefore it is discussed in the light of publications of the European Union and member states, as well as recent literature on the subject. Additionally, academic literature on trade policy addressing climate change and trade policy instruments' influence on international trade is discussed to give a broader context for EU CBAM. This will form the basis for a theoretical framework. The empirical part of this study employs qualitative research methods, primarily through semi-structured interviews with professionals from relevant institutions such as Finnish Ministry of Economic Affairs and Employment and Finnish Foreign Ministry, and interest groups. Alongside semi-structured interviews, secondary data is collected from Finnish government documents and analysed to gain more comprehensive picture of CBAM's influence on Finnish foreign trade.

There may be some limitations to this study. For instance, the legal issues related to the EU CBAM are beyond the scope of this study. Due to time constraints, the actual impacts of the CBAM during the definitive regime cannot be analysed. Therefore, the analysis of the influence of the CBAM on Finnish trade is based on expert estimations and projections based on current knowledge. Additionally, at the time of writing, some details of CBAM are still being finalised and it is recognised that potential changes are possible before the definitive CBAM regime begins in 2026.

2 Trade policies for fostering a green transition globally

2.1 Climate change calls for immediate global action

Climate change poses an urgent threat to our planet. The greenhouse gas (GHG) emissions caused by human activities through e.g. energy use, land-use, lifestyle and patterns of consumption and production have led to global surface temperature reaching 1.1°C above pre-industrial levels in 2011–2020. Global warming is highly likely to exacerbate various adverse effects, including rising temperatures, sea level rise, extreme weather events, loss of biodiversity and disruptions to ecosystems and economies. Thus, climate change puts the welfare and security of the world at great risk. (IPCC 2023, 42-46, 63, 76.) While the risks of climate change appear ever more serious, it has been verified that 2024 holds the record for the highest global temperature since data collection began in 1850. Simultaneously, 2024 marked the first year when the global average temperature exceeded 1.5°C above pre-industrial levels, reaching an average increase of 1.6°C. The 1.5°C increase above the pre-industrial level has previously been considered a critical baseline for preventing the most severe impacts of climate change. (Copernicus 2024.)

Addressing climate change has been on the agenda of international cooperation since the 1990s, when UN General Assembly launched negotiations on the issue in 1990. Since then, discussions regarding global climate mitigation have been ongoing, with multiple rounds of negotiation aimed at designing and revising the international climate change policies over time. Governments have committed to various climate change agreements, including the UNFCCC, the Kyoto Protocol and the Paris Agreement. (Allan & Bhandary 2024, 155.) The Paris Agreement differs from all other international agreements to tackle climate change in that it is legally binding for the first time ever. Therefore, the Paris Agreement is an important milestone in the multilateral climate change process. (Rhodes 2016, 97.) It was adopted by 195 parties in 2015 as a result of the negotiations at the UN Climate Change Conference (COP21) and entered into force in 2016. The main goal of the agreement is to limit the global average temperature rise. Keeping the temperature increase to 1.5°C above pre-industrial levels or less has been recognized crucial, as the impacts of climate change have been predicted to be much worse if temperatures rise above this level. To succeed in this goal, GHG emissions should reach their peak by 2025. Furthermore, GHG emissions should decline 43% by 2030. (UNFCCC 2023a.) Hence, there is little time left to succeed in limiting the severity of climate change.

However, existing agreements as they stand have been estimated to be insufficient to address the scale of climate challenge. For instance, the bottom-up approach of the Paris Agreement gives states significant flexibility in setting their own climate action plans, known as nationally determined contributions, for reducing emissions and implementing climate adaptation measures. Moreover, there is no enforcement mechanism to ensure that a country complies with its nationally determined contributions, which could lead to unilateral climate action. (Hecht & Peters 2019, 94.) The inadequacy of existing measures is also underlined by a recent study which found that the majority of authors contributing to the Intergovernmental Panel on Climate Change reports doubt that global warming will be limited to well below 2°C (Wynes et al. 2024, 2).

The latest United Nation's Climate Change Conferences signal some progress in multilateral climate change cooperation, but the question remains how effective these agreements will be in driving concrete action, as there is still a lack of binding commitments, clear timelines and financial support for a just energy transition. (see van Asselt 2023). In November 2023, COP28 in Dubai resulted in an agreement in which countries made a historic commitment to “transitioning away from fossil fuels in energy systems” and move towards renewables and energy efficiency (UNFCCC 2023b, 5). Thus, the urgency to reduce fossil fuels was raised for the first time in official negotiations, even though the term "phasing out fossil fuels" would have signaled an even stronger commitment than the more ambiguous term "transition away from fossil fuels". (The Lancet Planetary Health 2024).

A year later, COP29 in Baku was expected to focus on accelerating the transition from fossil fuels to renewable energy and increasing financial support to vulnerable nations (Mulcahy & Smith 2024, 1623). While there were discussions on both topics, no significant commitments were made to accelerate phase-out from fossil energy and financial support for vulnerable countries continued to be a subject of ongoing debate. Although some compromise was reached on the annual climate finance paid by rich countries to developing countries, from the perspective of climate finance researchers and developing countries, the result was still insufficient. The rich countries agreed to increase annual funding from the current amount of around USD 100 billion to USD 300 billion by 2035. However, the agreed amount is nowhere near the USD 2.4 trillion annual funding proposal that poor countries and an influential report by scientists and economists saw as sufficient to genuinely support the less developed countries' green transition and climate change mitigation efforts. (Masood 2024, 17-18.)

To conclude, while significant steps in international climate change co-operation have been made, the progress to date has been insufficient to tackle fully the severity of the climate crisis. With the effects of climate change already becoming increasingly severe, the need for concrete action is more urgent than ever. It is essential to avoid a situation where only unilateral efforts are made, which would lead to fragmented and ineffective solutions. Trade policy offers one way to reinforce the existing international framework for climate action. The following section will explore how trade policy can be used to reduce emissions and promote transition from fossil fuels to renewable energy.

2.2 Harnessing trade policy for climate change action

Trade policy refers to the management of the exchange of goods and services across international borders by national or regional economies. It involves measures to regulate imports and promote or control exports. Trade policy reflects a country's openness or isolation in global markets and is implemented via multilateral institutions like the World Trade Organization (WTO) or through regional trade agreements (RTAs). (Velut 2015, 485, 489-490.) Most important forum and institution for trade policy negotiations is WTO, where 164 member countries have agreed to gradually reduce and remove tariffs to benefit each other (Droege & Panezi 2022, 169). In recent decades, the scope of trade policy has broadened significantly, moving beyond traditional tariffs and import quotas to wider selection of trade policy tools. At the same time, trade policy is increasingly driven not only by economic objectives but also by political and social objectives. (Velut 2015, 485, 489-490.)

It should be noticed that it is generally thought that the mere goal of trade policy is not increased trade – instead, it is the benefit it brings to the human being. The opening of global markets has brought many good things, such as higher incomes and less poverty. (Cosbey 2022, 12.) Closer trade relations have allowed many countries to prosper through specialization and technology and innovation have spread across national borders (World Bank 2018). As Figure 1 shows, international trade has grown exponentially over the last 40 years, growing more than 12-fold in value. Whereas in 1980 global exports stood at around USD 2 050 billion, it reached close to USD 25 000 billion in 2022. This statistic excludes trade in services, which today accounts for a significant share of global trade. (WTO 2024.) However, as trade between countries has accelerated and the volume of exports has increased, this has an impact on nature and the environment. It has been estimated that global trade contributes significantly to global carbon emissions, accounting for approximately 20–33% of them. (Wiedmann & Lenzen 2018, 315.)

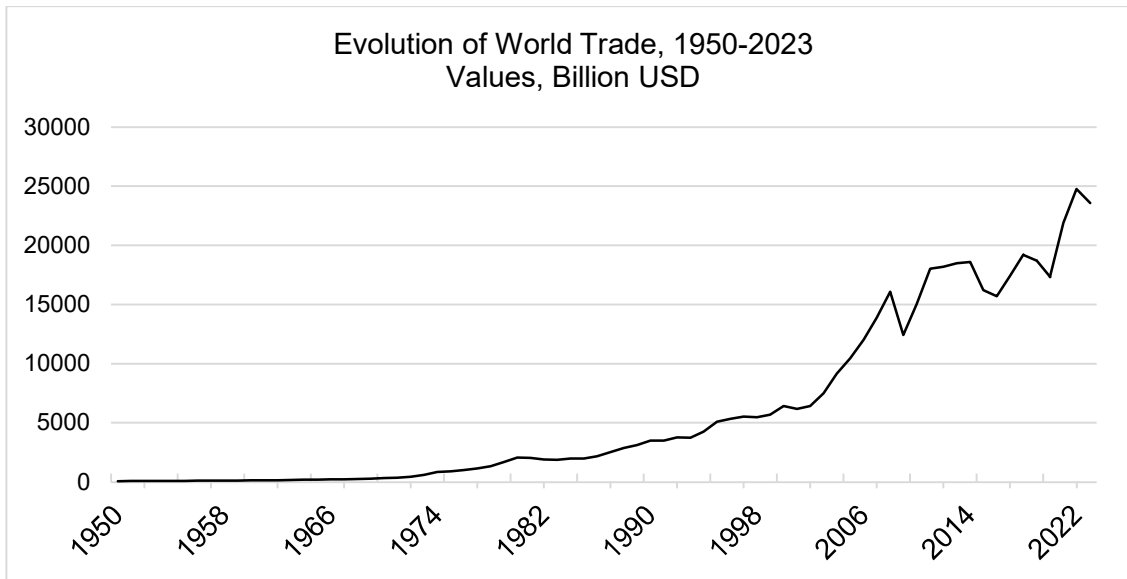


Figure 1 Evolution of World Trade from 1950 to 2023 (WTO 2024)

As international trade has grown at an unprecedented rate, there has also been a notable shift in the geography of global supply chains with affordable labor costs as the main driver (Hoekstra et al. 2016, 152). Initially, these supply chains moved towards China, but more recently, they have been shifting towards other developing countries in South Asia and Africa, i.e. the global south. (Jiang & Green 2017, 103.) This shift in global supply chains has also led to a transfer of environmental impacts from developed countries to less developed countries. Furthermore, the offshoring of manufacturing industries has resulted in a general increase in ecological degradation due to more CO₂ intensive production combined with less stringent environmental regulation in developing countries. (Hoekstra et al. 2016, 153, 163.) Offshoring production and the associated CO₂ emissions reduces the effectiveness of national mitigation policies and could thus undermine the gains made in decoupling environmental impacts from economic growth in developed countries (Wiedmann & Lenzen 2018, 314). After all, GHG emissions, though generated locally, contribute to global warming regardless of where they are emitted (IPCC 2023, 4445).

The seriousness of climate change for human security and survival has not been a dispute in the scientific debate for years. Instead, it is generally acknowledged that climate change poses one of the most critical existential challenges to society. (IPCC 2023, 42.) It can be argued that if climate change is not addressed at the right scale and speed, any potential development benefits of trade policy will be offset. Indeed, all kinds of policy makers, including those working with trade policy, need to take targeted actions to support and facilitate effective climate change mitigation and adaptation efforts. (Cosbey 2022, 12).

Cosbey (2022, 12, 19) builds his argument for harnessing trade policy to climate change on the fact that the fundamental purpose of trade policy is to benefit humankind. This calls for a rethinking of trade policy, guided by the following questions: what are our most urgent needs and what actions are needed to meet them; whether and how trade law and policy are creating barriers to achieving these objectives and how they can be overcome; and how trade law can proactively lead to achieving climate change objectives rather than simply staying out of the way. Some trade policy measures to address climate change are unlikely to have significant trade impacts, or some may have synergies for both climate and trade. However, it is a fact that combating climate change by trade policy measures will sometimes have undesirable effects on trade. Still, it is important to bear in mind the importance of prioritisation, as a healthy planet is a prerequisite for a thriving economy.

Harnessing trade policy to address climate change is not without controversy. The classical view of trade economists opposes using trade measures for non-economic purposes as they are seen to be ineffective and create costly economic distortions, such as heightened vulnerability to protectionist interests. Instead, they suggest adhering to the targeting principle, when trade distortions occur. In the context of climate change, this would mean introducing a tax targeted directly on greenhouse gas emissions to make their price reflect their true cost to the planet. While there are valid arguments about why trade policy should not be used as a mitigation tool, the view is somewhat outdated in today's world. A global carbon tax seems almost impossible in today's world of political and geopolitical disputes. (Moreira & Dolabella 2023, 780-781.)

At the same time, for many countries the use of trade policy instruments for climate reasons is already a reality. For instance, many countries have already established their own unilateral emissions trading schemes. (Moreira & Dolabella 2023, 780-781.) Furthermore, WTO member countries introduced more than 5000 trade-related policies targeted at climate mitigation between 2009 and 2021 (WTO 2023, 6). Hence, using other types of trade policy measures for climate change mitigation remains the "second-best solution" when a global carbon tax is not feasible. (Moreira & Dolabella 2023, 780-781.)

In conclusion, the use of trade policy instruments to mitigate climate change is increasingly seen as necessary in the absence of a global carbon tax in the global climate change mitigation efforts. While these solutions do not come without a cost, the severity of climate change requires action in all policy areas and thus also a rethinking of trade policy. Conversely, trade and environmental objectives can sometimes complement each other. The next section explores some of the possible instruments such as liberalization of trade in environmental goods and services, reforming subsidies

and government procurement practices, border carbon adjustments and environmental standards which offer pathways to align international trade with the pressing need for climate mitigation. However, these are just some of the tools available, as the challenge of mitigating climate change demands a wide and innovative range of solutions.

2.3 Trade policy instruments for climate mitigation

Trade policy instruments, when strategically designed and implemented, can significantly support climate change mitigation. The available portfolio of trade policy instruments for limiting global warming is broad, but their popularity and feasibility vary. (Cosbey 2022, 13-14.) Some key policy tools to mitigate the effects of climate change include revising government procurement policies, efficient use of environmental standards and regulations, opening trade for climate-related services, balancing tariffs to support clean industries instead of carbon-intensive sectors, reforming and repurposing environmentally harmful subsidies, developing carbon pricing initiatives and their better alignment internationally and border carbon adjustments (WTO 2023, 7-12). Although carbon pricing falls under national sovereignty, it is important to address it in this section, as it is centrally linked to the border carbon adjustments and can significantly impact international trade (Cosbey 2022, 14).

Governments have a lot of financial power, which is also reflected in the procurement they carry out. Government procurement of goods and services represents about 13% of global GDP, i.e. around USD 13 trillion a year. It is estimated to cause directly 15% of global GHG emissions. Therefore, it truly matters how environmental effects are taken into consideration in public tenders. For instance, if climate-related criteria were increasingly used alongside price as a selection criterion in public tenders, this would support achieving national emissions reduction targets and drive lower carbon emissions globally. Additionally, this would create markets for innovative low-carbon products and services and encourage greener industry practices. (WTO 2023, 17–18.) Green public procurement is a rather rare practice so far, at least when looking at the figures reported to the WTO Environmental Database (2024), where 84 environment-related government procurement measures had been reported between 2009 and 2022. While there has been debate on whether there is a conflict between climate-friendly procurement practices and international trade agreements, WTO's agreements on Government Procurement (GPA 2012) allows the use of technical specifications to protect the environment and assess tenders based on the environmental impact of goods or services (WTO 2023, 17–18).

Harmonizing environmental regulations and standards globally could bring substantial benefits for trade facilitation and climate. Many countries still utilize different environmental regulations for various reasons, ranging from climatic or geographical differences to protectionist motives. Yet, this regulatory fragmentation always creates a non-tariff barrier to trade. Even if the standards are similar, exporters must carry out separate testing for most countries they sell to. (Cosbey 2022, 18–19.) Thus, harmonizing these laws and adopting international standards would help eliminate compliance costs for producers (WTO 2023, 20–21). The use of environmental standards as such has already proven to be useful in climate change mitigation and it is also a relatively cost-efficient way towards emission reductions (IPCC 2023, 104). Greater international cooperation on climate-related regulations and standards would further strengthen these national emissions reductions efforts and facilitate tracking global emissions reduction efforts by sharing the same methodology (WTO 2023, 21).

The liberalization of trade in environmental goods and services offers also a win-win opportunity, both from an economic and environmental standpoint. This would include lowering tariff and non-tariff barriers for e.g. low-carbon technologies or installing, monitoring and maintaining certain climate-related goods, which are critical in the green transition. With fewer trade-related barriers for environmental goods and services, their global dissemination is faster and wider. (Cosbey 2022, 17–18; WTO 2023, 23.) It is somewhat surprising that clean industries are currently facing higher import tariffs on average in comparison to carbon-intensive industries. It is estimated that even moderate rebalancing of import tariffs currently applicable in certain carbon-intensive and lower-carbon sectors could significantly drive down the cost of renewable energy and promote the adoption of low-carbon technologies. (WTO 2023, 26–27.) Additionally, environmental services remain as one of the least open sectors under the WTO General Agreement on Trade in Services (GATS). As of 2022, only 59 WTO members have made specific commitments in at least one of the seven environmental services sub-sectors. (WTO 2022, 122.)

Reforming subsidies has the potential to play a substantial role in addressing climate change. Repurposing subsidies paid to fossil fuels, agriculture, fisheries and transport could offer significant emission reduction opportunities. Yet, approximately USD 1.25 trillion is distributed globally each year to environmentally harmful subsidies by national governments. This creates a market distortion by failing to reflect the true cost of environmentally harmful activities in their prices. Reforming subsidies would eliminate incentives that encourage the overconsumption of environmentally damaging natural resources and the environmental degradation, which ultimately hinders countries' progress towards achieving their sustainable development goals. (Damania et al. 2023, 258–259.)

Furthermore, eliminating environmentally harmful subsidies would free up public funds which could be redirected to more sustainable purposes. The public funds released could be allocated to initiatives such as improving energy efficiency, investing in renewable energy, financing a just green transition in developing countries, or supporting reforestation efforts. (WTO 2023, 9, 30–31). Nevertheless, when introducing new environmental subsidies, attention should be paid to ensure that they are well-targeted and nondiscriminatory, so they can contribute to the diffusion of low-carbon technologies and increase the affordability of climate-friendly products instead of creating trade tensions. (WTO 2022, 22).

Carbon pricing refers to the price paid by economic actors per tonne of CO₂-equivalent emitted. It can be implemented in several ways, such as through excise taxes on carbon-intensive products, direct carbon taxes or emissions trading schemes. (WTO 2023, 43.) Carbon pricing has shown to be an effective policy tool to reduce emissions in heavy industries such as steel and cement (Teush et al. 2024, 8). Yet, global carbon pricing remains fragmented, with over 70 different schemes covering only 23% of emissions and significant variation in carbon prices. (World Bank 2022, 15). To respond to large differences in carbon prices around the world and the risk of carbon leakage, many countries with carbon pricing are planning to introduce border carbon adjustments (WTO 2023, 44). Border carbon adjustments (BCAs) can take form in charges on imports or rebates for exports based on the carbon content of the traded goods (Droege & Panezi 2022, 163). However, their introduction poses the risk of increasing trade tensions. This could lead to a weakening of trade's beneficial role in the fight against climate change in many ways, including trade in green technologies. (WTO 2022, 89-90.) There are also other challenges associated with BCAs, such as high costs due to regulatory changes, administrative complexities and legal factors. No BCA, even if well-designed, can fully guarantee protection against carbon leakage. (Droege & Panezi 2022, 177.) This underlines the importance of international coordination of carbon policies to address the challenges involved (WTO 2022, 90).

In this section, some of the main trade policy tools for mitigating climate change have been covered. Some of these measures can benefit both the environment and economic activity, while others, such as BCAs, pose greater challenges to trade than opportunities. International cooperation remains essential in aligning trade policy with climate goals to decrease the risk of trade tensions and improve the efficiency of these policies. However, with multilateral climate efforts facing setbacks, such as Trump's re-election and the U.S. withdrawal from the Paris Agreement (Romanello et al. 2025, 1649) or WTO stagnation (Narlikar 2022, 1555; Velut 2015, 489), many countries are turning to unilateral actions or regional co-operation. In line with this trend, the EU is

also exploring ways to accelerate climate action by combining trade and climate policies in new ways.

3 The EU Carbon Border Adjustment Mechanism

3.1 The European Union's mission for climate neutral economy

The European Union's efforts to combat climate change are widely recognized as ambitious and progressive at the international level, which is why the EU is often considered to show strong international climate leadership (Oberthür & Dupont 2021, 1095-1097). This is reflected in the EU's efforts to formulate and implement different policies and strategies targeted at climate change mitigation as well as the EU playing a key role in international climate negotiations. Following the Paris Agreement of 2016, the EU has introduced a series of new policies designed to mitigate climate change more effectively. The core of the EU's climate strategy is formed by the European Green Deal which was established by the European Commission together with the European Council in 2019. (Cifuentes-Faura 2021, 1333, 1335.)

The European Green Deal sets out an initial roadmap of the key policies and measures to enable the European Union to achieve climate neutrality by 2050 at the latest. (Cifuentes-Faura 2021, 1333, 1335.) This means transforming the EU into a resource-efficient economy, where there would be no net emissions by 2050, while maintaining competitiveness (European Union 2023, 52). In 2021, the European Commission presented the Fit for 55 package which consists of policy proposals designed to help the EU meet its 2030 climate targets by facilitating the transition to a sustainable, climate-neutral economy. The legislative package puts into practice the EU's commitment to reduce net GHG emissions by at least 55% by 2030 in comparison to 1990 levels, as stated in the EU Climate Law. (European Commission 2023a.)

It should be still noted that there is an ongoing discussion about the direction of the EU's climate policy in the context of shifting geopolitical and economic priorities. Recent crises such as the COVID-19 pandemic, rising energy prices following Russia's invasion of Ukraine and intensifying global competition have pushed the EU to become more agile and shape its political priorities. Although this can be seen to have led to a more pragmatic and technology-focused approach to climate mitigation, the EU has not abandoned its climate targets. The new Commission has reaffirmed its commitment to reducing GHG emissions by 55% by 2030 and achieving climate neutrality by 2050. However, the focus has partially shifted towards industrial competitiveness and energy resilience. This is reflected in the Clean Industrial Deal which is the Commission's new plan to decarbonize European industry by investing in low-carbon technologies and securing industry's access to affordable energy and raw materials. (FIIA 2024.)

Although the EU appears to be adjusting its approach to climate change mitigation towards greater pragmatism, an important instrument for achieving the EU's carbon neutrality target continues to be the EU Emissions Trading System (EU ETS), launched in 2005. It covers all EU member states as well as Iceland, Liechtenstein and Norway. Covering around 45% of the EU's GHG emissions, the EU ETS includes energy-intensive sectors in industrial manufacturing, electricity and heat generation, aviation, and maritime transport. The EU ETS is a cap-and-trade system which imposes a limit on the total amount of greenhouse gases that can be emitted by companies subject to the system. The cap means that there is a limited number of emission allowances, where one emission allowance represents the permission to emit one metric ton of carbon dioxide (CO₂) or the equivalent amount of other powerful greenhouse gases, nitrous oxide (N₂O) and perfluorocarbons (PFCs). (European Commission 2022, 16, 26.)

Under EU ETS, companies must obtain emission allowances equal to the amount of emissions their business requires annually. Non-compliance will result in heavy fines. The standard way to acquire emission allowances is through auctioning, but some allowances are allocated for companies at no cost. (European Commission 2022, 16, 26.) Free allocation applies to the sectors most at risk of relocation outside the European Union. (European Commission 2024c). However, free allowances will be phased out by 2035 with the introduction of CBAM (Shum 2023, 275). Figure 2 shows the current plan to phase out the EU ETS free allocation, while at the same time the CBAM will increasingly provide protection for sectors at risk of carbon leakage.

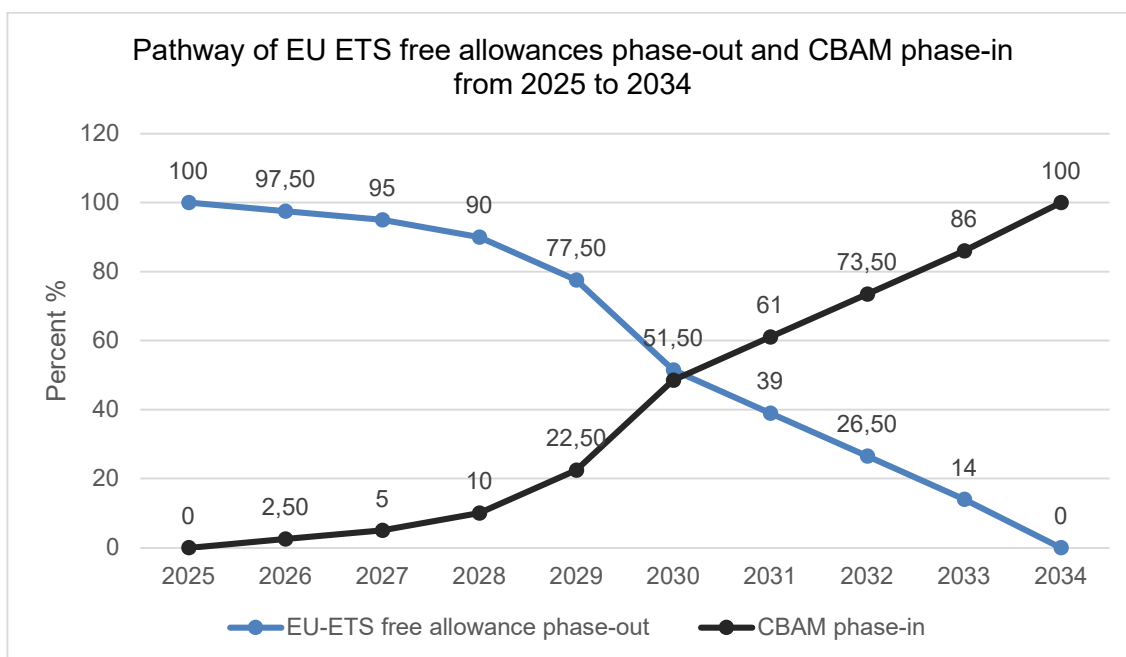


Figure 2 Pathway of EU ETS free allowances phase-out and CBAM phase-in from 2025 to 2034 (Statista 2024a)

While the EU ETS has been operating, emissions have started to decline in participating countries and industries (Bayer & Aklin 2020, 8809). This is illustrated in Figure 3 which shows the downward trend in total GHG emissions in the European Union between 1990 and 2021. Thus, EU member states have progressively managed to decarbonise their economic activities (Lovcha et al. 2022, 10). This is further demonstrated by the fact that companies covered by the EU ETS have applied for more than 35% more patents for low-carbon technologies than before the EU ETS (Calel & Dechezleprêtre 2016, 174). Between 2008 and 2016, the EU ETS has been shown to have reduced GHG emissions by a total of 1.2 billion tonnes of CO₂ or around 3.8 % per year (Bayer & Aklin 2020, 8809).

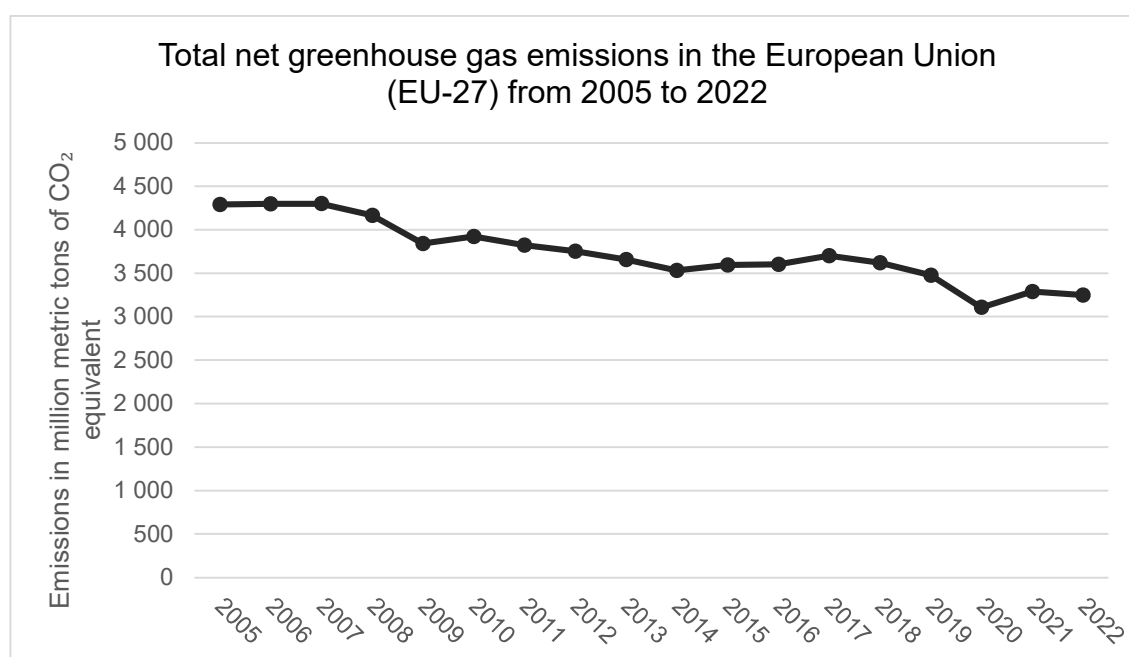


Figure 3 Total greenhouse gas emissions in the EU from 1990 to 2021 (Statista 2024b)

The GHG reductions are the core goal of the EU ETS. That is why the emissions cap is reduced annually in line with the EU's climate target to ensure that emissions decrease overtime. (European Commission 2024c.) However, there has been an oversupply of permits and market prices for carbon dioxide have been relatively low. It has therefore been argued that the EU's political commitment to ever stricter carbon regulation in the future has primarily led companies to move away from carbon-intensive production. (Bayer & Aklin 2020, 8809.)

The EU ETS prices have experienced a significant increase since its establishment, although with some fluctuation along the way. The most significant price increases were seen after the reform of the EU ETS in 2018 and the introduction of the Fit for 55 legislative package in 2021 (Wildgrube 2023, 53, 63-64). As the EU has adopted even more ambitious climate targets through the Green

Deal and Fit for 55, the EU ETS limits have been tightened and further changes are likely (Pietzcker et al. 2021, 2). Expected changes include a faster reduction in the total number of emissions allowances, a decrease in the allocation of free allowances to installations and the inclusion of new sectors such as shipping, road transport and buildings into the EU ETS. It remains to be seen how implementing these would impact economic activity. (Lovcha et al. 2022, 10.) Yet, the tightening EU ETS emission reduction target, reflected in increasing the annual reduction rate of available emission allowances, is expected to drive up the permit prices in the upcoming years (Wildgrube 2023, 63-64; Pietzcker et al. 2021, 13).

It has been discussed how the EU has taken significant steps in climate change mitigation in global comparison, while recently adjusting its approach to a slightly more pragmatic way. By adopting a large-scale emissions trading system as a global frontrunner supported by other climate mitigation policies, the EU has succeeded in bringing down the total GHG emissions. There is still a long way to a completely decarbonized European economy, but the Commission remains committed to a carbon-neutral Europe by 2050. However, the question arises whether some of the EU's domestic climate policies could be offset due to relocation of carbon-intensive production in pursuit of cost savings – considering especially how EU ETS prices are likely to increase further in the future. This issue is addressed in more depth in the next section, which examines the evidence on carbon leakage from the EU.

3.2 Carbon leakage from the European Union

The reformed EU ETS, together with the EU's ambitious climate targets, has driven up emissions allowance prices and made it more expensive to pollute within the Union (Wildgrube 2023, 53). While it will cost more to pollute in the EU, this will not necessarily be the case in non-EU countries. Instead, the costs of polluting will continue to vary around the world in the absence of a common cap-and-trade system. (Verde 2020 321.) In 2021, the global carbon prices for key heavy industries, i.e. aluminium, cement, and steel production, at risk of carbon leakage spanned a wide range, starting from less than USD1/tCO₂e to a maximum of USD93/tCO₂e (Teusch et al. 2024, 13). The carbon price asymmetries between the EU and its trade partners have raised concerns about the competitiveness of companies operating in the EU and the risk of carbon leakage (Verde 2020, 321).

Carbon leakage refers to a phenomenon where production shifts from countries with strict environmental regulations to those with less-stringent environment polices, which leads to an overall increase in global CO₂ emissions (Zhong & Pei 2022, 1). This phenomenon can occur

through several mechanisms, the most significant being changes in business operations and investment decisions. When firms are required to pay for their emissions in one jurisdiction while their competitors in other regions are not subject to similar costs, they may face reduced competitiveness. As a result, companies might choose to relocate production or investment to countries with lower regulatory burdens. At the same time, even if firms do not outsource their operations, they risk losing market share to foreign competitors who are not subject to equivalent environmental costs. In both cases, the end result is geographical displacement and an increase in emissions, rather than a reduction in emissions in line with the objectives of national climate policy measures. (Droege & Panezi, 2022, 163.)

There is mixed evidence of carbon leakage that can be traced to differences in carbon pricing. Many recent empirical studies have found that carbon pricing has had little to no impact on carbon leakage or competitiveness in general (see e.g. Venmans et al. 2020; Verde 2020; Dechezleprêtre et al. 2023). Contradictory to this, there is also strong evidence supporting the existence of carbon leakage at moderate levels. For instance, Teusch and colleagues (2024, 6-8) found that as the carbon price difference between the domestic and foreign countries increases, imported emissions also rise. Specifically, a USD 1/tCO_{2e} increase in this difference leads to a 2.5% increase in emissions embodied in imported cement and steel products. Furthermore, they identified that carbon leakage risks the effectiveness of domestic emission reductions, as approximately 13% of them are offset by carbon leakage through international trade. The significance of this study is illustrated by the size of the data set, which covered 140 countries and 80% of global aluminium, cement, and steel production from 2015 to 2021.

Empirical evaluations of the EU ETS on carbon leakage yield mixed results. Most often, carbon pricing in the EU ETS has generally not been found to cause direct carbon leakage from the EU. However, since price signals have remained relatively low for much of the EU ETS history, the limited evidence of leakage in ex post modeling analyses is not entirely unexpected. (Felbermayr & Peterson 2020, 12-13.) Recently, empirical evidence has also been found of carbon leakage from the EU. Kuusi and Wang (2022, 25) found that the various phases of the EU ETS are connected to an increase in the carbon intensity of imported products to the EU, especially in the later phases of the EU ETS. The carbon intensity has increased by 4 % in the imported products that would be subject to EU ETS if produced within the EU. In addition, under the EU ETS, import-related CO₂ emissions have increased by around 12%. Simultaneously the carbon intensity of EU exports is lower than pre-EU ETS levels, showing that the EU ETS is working as intended. This study is among the first ones to find clear empirical evidence of carbon leakage from the EU. The

inconsistency to other research focusing on carbon leakage from the EU might be explained by this study utilizing a more extensive data period starting from 2000 to 2018.

Carbon leakage has been recognized as a risk to the EU's efforts to reduce its global greenhouse gas emissions footprint. So far, this has been addressed through mainly the transitional free allocation of EU ETS allowances at the level of best performers, which provides industries at risk of carbon leakage with free emissions allowances to mitigate the risk of carbon leakage. Additionally, financial measures have been introduced to compensate for indirect emission costs in regards to those arising from the pass-through of greenhouse gas emission costs into electricity prices. However, the free allocation of allowances is coming to an end and will be phased out gradually. This shift is driven by the recognition that in comparison to full auctioning, free allocation undermines the price signal generated by the system. Consequently, it reduces the incentive for industries to invest in additional measures to reduce greenhouse gas emissions. (European Union 2023, 53-54.)

As free allocation of EU ETS allowances is coming to an end as a tool mechanism to prevent carbon leakage, the EU has introduced the Carbon Border Adjustment Mechanism (CBAM) as a new policy tool to prevent carbon leakage from the EU as part of the Fit for 55 legislative package. The EU sees it as a necessary element for achieving climate neutrality, as carbon leakage reduces the effectiveness of EU's efforts to reduce its global GHG emissions. Therefore, the EU CBAM has been designed to align the carbon cost of imported goods with the EU's domestic carbon pricing, thereby levelling the global playing field. It is also intended to encourage producers in third countries to adopt cleaner and more efficient technologies, ultimately supporting global decarbonization efforts. (European Union 2023, 53-54.)

It should be noted that new emissions trading systems have been introduced and already established systems have been developed further in recent years. This has raised carbon prices, although at varying rates around the world (OECD 2023, 8-10.) There are currently 36 ETSs operating, with an additional 22 systems either being developed or under consideration. This trend is especially evident in regions with major emerging economies, such as Mexico and Brazil in Latin America, China and India. (ICAP 2024, 4.) Yet, only about 23% of global greenhouse gas emissions are covered by carbon pricing instruments, including carbon taxes and emissions trading systems (World Bank 2022, 15).

In summary, while international carbon pricing initiatives have gained significant momentum in recent years, such measures still cover less than a quarter of global greenhouse gas emissions.

Considering the persistent global disparities in carbon pricing, the EU's concern about its impact on both the effectiveness of climate change mitigation and the competitiveness of EU producers becomes clear. In response, the EU has introduced a new trade policy instrument designed to encourage other countries to adopt carbon pricing instruments and create a level-playing field between the EU producers and the non-EU producers, the EU CBAM. The following section examines the design and planned implementation of the EU CBAM, as well as its expected impacts.

3.3 The implementation of EU CBAM

3.3.1 The timeline of EU CBAM

At the time of writing, EU CBAM is in a transitional phase, which began October 1, 2023. During the transitional phase, importers are expected to report emissions data on CBAM products to the Commission and CBAM certification fees are not yet collected. Imports of CBAM products above EUR 150 are automatically subject to CBAM regulation. CBAM products include a selected group of carbon-intensive export goods that are particularly vulnerable to carbon leakage, which are certain iron and steel products, ironstone, electricity and some types of fertilizers, aluminum, cement and chemicals. Unlike the full enforcement phase, not only direct emissions but also indirect emissions in all CBAM imports must be reported during the transitional phase. (European Commission 2024b.) Reporting has been estimated to pose challenges for European importers and their suppliers, due to the required level of detailed emissions data. Producing the quarterly CBAM report involves collecting information from multiple stakeholders involved in the production process and data sources while adhering to the reporting rules. The manual nature of the reporting process makes it time-consuming and increases the risk for errors. (Ramos et al. 2024, 2.)

The transitional phase functions as a pilot that producers, importers and national authorities can utilize to learn how the mechanism works and how embedded emissions are calculated and reported. Before the definitive period starts, the feasibility of including other goods produced in sectors covered by the EU ETS in the scope of the CBAM mechanism, such as certain downstream products, will be assessed. The data collected during the reporting phase will also be used to determine the emission calculation methodology for the definitive phase. (European Commission 2024b.)

From the beginning of 2026, the transitional phase ends and CBAM will enter its definitive period. This means moving beyond reporting obligations and importers will need to purchase CBAM certificates corresponding to the carbon emissions of the imported CBAM goods. The price of these

certificates will align with the weekly average auction price of EU ETS allowances. Importers will also have the opportunity to prove that a carbon price has already been paid during production in the country of origin to get the corresponding amount deducted from the CBAM levy. With the full implementation of CBAM, the import of CBAM goods will be subject to authorization. (European Commission 2024c.)

The CBAM sets out separate responsibilities for the European Commission and the member states. Each EU member state designates a national competent authority (NCA) responsible for implementing CBAM at the national level. NCAs authorize imports, maintain a registry of authorized declarants, monitor compliance and enforce penalties. At the EU level, the European Commission acts as the central administrator of CBAM. It supports NCAs in their tasks by maintaining a central registry and reviewing CBAM reports communicated by reporting declarants. Additionally, the Commission is responsible for monitoring the implementation of CBAM, preventing circumvention of the mechanism and analyzing its broader impact on trade, exports, downstream products and least developed countries. During the definitive period, the Commission will establish the Common Central Platform for the sale and repurchase of CBAM certificates. (European Commission 2024b, 21-22.)

Under Ursula von der Leyen's second Commission, the EU CBAM might be significantly reformed, as outlined in the proposed Omnibus package. A central change is the introduction of a cumulative annual import threshold of 50 tonnes per importer, which would exempt approximately 90 percent of importers, mostly small and medium-sized businesses, from CBAM obligations. These importers are estimated to contribute only about one percent of CBAM-related emissions by the Commission. The reform is part of the EU's new Competitive Compass strategy, which aims to reduce the administrative burden of a number of EU regulations that have been brought to the Commission's attention by many businesses and stakeholders. According to the Commission, the changes will simplify the CBAM framework without compromising its environmental goal of reducing carbon leakage, as it is estimated to still cover over 99 percent of embedded emissions. The simplification of the mechanism will also support potential future extensions of the mechanism. (European Commission 2025b, 1-5.)

To review, the timeline of EU CBAM has been covered and the basic elements of the mechanism and the responsibilities of importers, member states and their national authorities and the European Commission have been described. Before the definitive period, it is likely that the mechanism will be modified to some extent, for example in terms of the method of calculation of the approved

embedded emissions data and the scope of the mechanism. Although the EU CBAM is currently being applied for reporting purposes only and no CBAM certification fees are being collected, there is an ongoing debate regarding its potential impact on the environment, the economy, and international trade once fully operational. The following subsection will examine this debate in depth and assess the effects and reactions that have already been noticed.

3.3.2 Projected impacts of EU CBAM

The European Commission (2023, 54) describes the CBAM as a “climate measure which should support the reduction of global greenhouse gas emissions and prevent the risk of carbon leakage”. The risk of carbon leakage is reduced by applying CBAM certificate fees for imported CBAM products starting in 2026, to establish comparable carbon pricing between imported CBAM goods and domestic products that fall under the EU ETS. The mechanism is also intended to promote a global reduction in GHG emissions by encouraging third-country producers to transfer to lower-carbon technologies. Thus, the EU officially presents CBAM as a climate policy tool, rather than a trade or tax measure aimed at raising revenues, while it will nevertheless entail trade implications and is estimated to bring 1,5 billion euros annually to the EU budget when in force. (Cornago & Berg 2024, 13). The EU's CBAM is the first of its kind globally in such scale. While it has been the subject of extensive theoretical analysis, its practical implementation and effectiveness remain to be seen. (Amendola 2025, 2-3.)

Since the primary goal of the EU CBAM is framed as mitigating climate change through addressing carbon leakage, many researchers have been interested how effective it will be in this regard. It has been found that CBAM can reduce carbon leakage through preserving the competitiveness of EU production (Zhong & Pei 2022, 10-11; Fragkos et al. 2021, 18; Böhringer et al. 2022, 29). However, there is limited evidence for CBAM's direct effect on global emissions reduction. For instance, Zhong and Pei (2022, 10-11) assessed CBAM's impact to be at best limited on global carbon footprint. Prior research aligns with these findings, suggesting that introducing CBAM would lead to either negligible reductions in global emissions (Fischer & Fox 2012, 214) or only modest reductions (Winchester et al. 2011, 15).

While it seems that EU CBAM's direct impact on global emissions is highly debatable, its broader influence on international carbon pricing and industrial decarbonization holds promise for more substantial long-term benefits. By imposing a price on carbon-heavy imports, CBAM puts political pressure on other governments into strengthening their climate policies (Droege & Panezi 2022, 165). Already during the reporting period, it has been recognized that the EU CBAM has already

prompted other countries to consider developing or accelerating the establishment of their own carbon pricing systems or adjustment mechanisms. For instance, China is in the process of widening the scope of its emissions trading scheme to cover cement, steel and aluminium, whereas previously it only applied to the energy sector. Similarly, other countries such as Türkiye, India, Brazil and Chile are setting up their carbon pricing policies. The United Kingdom is set to follow in the EU's footsteps by setting up its own border carbon adjustment mechanism within a few years. Some other countries with carbon pricing already in place, such as Australia and Canada, are also considering doing the same. (Cornago & Berg 2024, 14-15.) The increasing level of international climate commitments represents the ideal scenario in response to the EU CBAM. If this development continues, it could ultimately reduce the need for BCAs in the long term. (Droege & Panezi 2022, 165.)

In addition to putting pressure on governments to increase their ambition on climate action, CBAM has also been discussed as a way to incentivize foreign producers to reduce their emissions and move to more sustainable technologies (Droege & Panezi 2022, 165) This is due to the fact that the EU's CBAM takes account of actual emissions, so foreign producers can reduce their border fees by showing that their products have lower content of greenhouse gas emissions (Amendola 2025, 3). This type of monitoring the carbon content of goods produced in foreign jurisdictions is expected to pose challenges and significant costs (Böhringer et al. 2022, 22). Additionally, in order to reduce their border charges, producers may resort to emission reshuffling instead of investing in greener technologies. Reshuffling refers to foreign producers supplying a country with a BCA with goods produced with lower emissions and redirecting goods with higher carbon content for domestic consumption or to other countries with no BCA. This would inevitably reduce the net environmental benefits of CBAM. (Droege & Panezi 2022, 166.) The impact of CBAM on producer behaviour remains to be seen, as CBAM payments are not yet in force. It is expected that producers' responses will depend on various factors, including their specific sector, the competitive advantage relative to European counterparts, and the additional costs imposed by CBAM on their operations. (Cornago & Berg 2024, 3.)

While on its reporting phase, the EU CBAM has not affected trade flows and CBAM goods are still imported on a business-as-usual basis. It appears that producers are absorbing indirect costs of CBAM implementation, such as those rising from measuring and tracking GHG emissions and reporting requirements. Once the certification fees come into force, the EU CBAM impact on trade flows becomes more apparent. (Cornago & Berg 2024, 16.) For instance, CBAM is expected to increase demand for domestically produced CBAM goods within the EU, while reducing demand

for imports from non-EU countries (Zhong & Pei 2022, 2). While this supports EU industries, it also raises production costs, particularly for sectors reliant on imported intermediate goods, such as the automotive, machinery, and electronics industries. As these industries face higher input costs, their competitiveness may decline, which could lead to lower production and loss of market share. (Kuusi et al. 2020, 20-21, 28.) Therefore, EU producers need to find ways to absorb the increases in production prices brought by CBAM to remain competitive in global markets, by e.g. improving their production processes and adopting more efficient technologies (Zhong & Pei 2022, 11).

The impact and effectiveness of EU CBAM partly relies on how the EU's trading partners perceive and respond to it. While its intent is to level the playing field and prevent carbon leakage from the EU, it will inevitably have a significant impact on the EU's main trading partners, such as Russia, China, Türkiye and Ukraine, which are the main exporters of CBAM products to the EU (Magacho et al. 2024, 247-248). It should be noted that with the war in Ukraine and the EU's sanctions on Russia, Russia's imports of CBAM products have dropped significantly and thus CBAM's role in raising Russia's climate targets is estimated to be limited (Pauw et al. 2022, 4).

Because of the trade implication on other countries, there are concerns that CBAM might be perceived as a protectionist measure, which could lead to political backlash and trade disputes and thus hinder global climate cooperation (Zhong & Pei 2022, 2; Cornago & Berg 2024, 13). In the worst-case scenario, such development could erase all the potential positive economic effects of CBAM for the EU and its producers. For instance, if the rest of the world reacts to the carbon tariff mechanism by increasing its tariffs on non-raw materials by an average of 2 % on imports from the EU, the EU GDP would on average fall by around 0.25% in the long term. (Kuusi et al. 2020, 13). In case of a broad trade conflict, the potential welfare losses are estimated to be nearly EUR 250 billion annually (Felbermayr et al. 2019, 34).

To avoid the risk of trade tensions and retaliatory measures, the EU could adopt various strategies that increase the credibility and international acceptance of the mechanism. These might include channelling CBAM revenues into financing global climate change mitigation efforts at least partially (Felbermayr & Peterson 2020, 17). For now, there are no concrete plans to use CBAM revenues for international climate financing. Instead, 25% of CBAM revenues will remain with member states and 75% will go to the general budget of the EU (Assous et al. 2024). Additionally, it is recommended that the EU engage in dialogue with its trade partners to mitigate political tensions and foster mutual understanding. Early and continuous engagement with affected exporting countries, as well as active participation in international institutions such as the WTO and the

UNFCCC, would demonstrate EU's commitment to global climate action. (Droege & Panezi 2022, 172.)

It is also important to maintain WTO compatibility and avoid the accusations of protectionism. For this reason, it has been argued that CBAM revenues should not be earmarked for any subsidy-type of use – instead, they should flow either to the general budget of the EU or allocated partially to climate-related initiatives, such as investments to support research and development, or green transition within the EU. (Droege & Panezi, 2022, 168, 172.) The compatibility of the EU CBAM with the WTO and international trade law has been one of the most debated issues since the introduction of the mechanism. Most authors see the creation of trade barriers with the WTO rules possible when it comes to complementing national climate regulations (Durel 2024, 35.) But to ensure compliance with the rules established by WTO, the EU must give up the free allocation of ETS allowances for sectors covered by CBAM, which could be otherwise seen as subsidies that distort international trade. The phase-out of free allocation will start gradually in 2025 and accelerate as it approaches towards its completion in 2034. (European Commission 2024b.)

The phase-out of free allocation under the EU ETS has raised concerns about the competitiveness of EU exports, which will no longer benefit from free allowances but may face increased competition in markets outside the EU where CBAM does not apply. Some worry that this could undermine the purpose of the mechanism if production shifts to more carbon-intensive countries if it becomes financially more viable to produce outside EU borders rather than importing CBAM products for further processing and exporting them to third countries. (Assous et al. 2024, 14) It should be still noted that many scholars do not view the phase-out of free allocation under the EU ETS as posing a significant risk to European industry. Bordignon and Gamannossi degl'Innocenti (2023, 13-14) found that stricter emissions regulation in previous phases of the EU ETS did not harm the performance of regulated firms. These results imply that gradually tightening the EU ETS and phasing out free allowances may be feasible without causing major negative impacts on industrial competitiveness.

To conclude, EU CBAM reflects the complexity of balancing climate objectives with trade realities. The EU presents CBAM as a climate policy tool, while it will nevertheless have trade implications and generate additional funds to the EU budget. The main function of EU CBAM is to reduce carbon leakage by protecting the competitiveness of EU industries. However, evidence of its impact on global emissions remains limited. To comply with WTO rules and avoid accusations of protectionism, the EU must phase out free ETS allocations for CBAM-covered sectors. During the

current reporting phase, trade flows remain largely unchanged. It is expected that more concrete influence on trade will be seen when CBAM certification fees are introduced in 2026.

3.4 Synthesis

Chapters 2 and 3 discussed the main theoretical aspects of introducing CBAM's to address carbon leakage. Chapter 2 examined the role of trade policy in supporting global climate change mitigation efforts. Chapter 3 presented the current knowledge of EU CBAM's background, design and anticipated impacts. The main elements of the theoretical background are presented visually in figure 4.

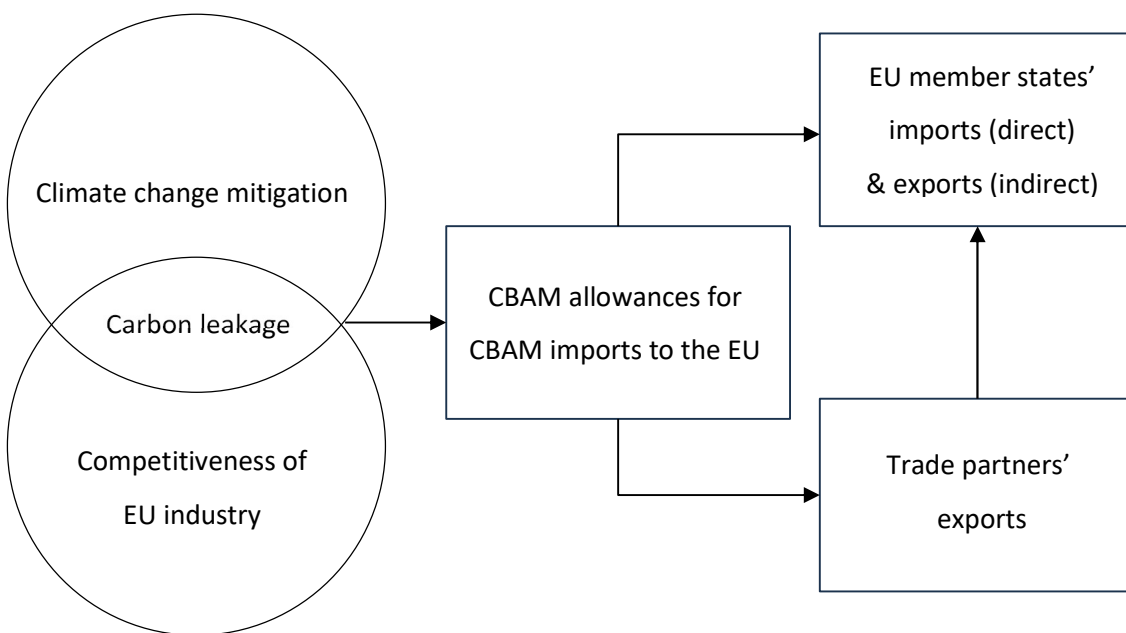


Figure 4 Theoretical framework on EU CBAM's role in addressing carbon leakage

On the left side of the figure, there is the two motives for introducing EU CBAM: climate change mitigation and supporting the competitiveness of EU industry which are partially interconnected. The first motive for introducing EU CBAM is addressing carbon leakage to mitigate climate change. This means that the EU CBAM's aims to reduce global CO₂ emissions in long term by levelling out the playing field between European producers who must comply with tightening climate targets and the EU ETS and the foreign producers. Additionally, it can encourage other countries to implement carbon pricing systems and incentivize foreign producers to move to cleaner production methods. In this way, the EU seeks to ensure that its climate policies are not undermined by increased emissions elsewhere. While in the theory the mechanism's ability to reduce global CO₂ emissions has been widely debated, this remains as the EU's main official reason for the introduction of EU CBAM.

The second motive is the support the mechanism provides for the competitiveness of EU industry which is also achieved by levelling out the playing field between European and foreign producers by introducing CBAM allowances in 2026. It has been argued that EU climate policies have led to increased production costs for European companies, which may prompt them to relocate production outside the EU. On the other hand, it can cause a loss of market share to foreign competitors not subject to similar regulations. Additionally, the phase-out of free allocation under the EU ETS has called for other means to prevent carbon leakage.

CBAM's influence on trade will be multifaceted. It will directly affect the exports of CBAM products from third countries and imports by member states through the CBAM allowance payments it introduces. Due to the geographical dispersion of supply chains, CBAM will also affect member states' exports, particularly in sectors that rely on imported CBAM goods as their intermediate goods. It is also possible that there will be greater impacts on member states' foreign trade if, for example, third countries were to introduce trade retaliation measures in response to the mechanism.

4 Research design

4.1 Qualitative research approach

This study employs a qualitative research approach rather than a quantitative one. According to Eriksson and Kovalainen (2008, 27), the nature of the phenomenon being studied should guide the research approach, methodology and the analysis. While one option would be to explore the influence of the EU CBAM on Finland's foreign trade through a quantitative study that would model numerically the possible impacts of EU CBAM on Finnish export and import figures, this study opts for a qualitative approach for two main reasons.

First, it is considered that taking a qualitative research approach allows for a holistic understanding of the EU CBAM and its influence on Finnish foreign trade. By adopting a qualitative research approach, it is possible to take into account the EU CBAM's complex, political and socio-economic context (Marković et al. 2017, 34.) Indeed, CBAM represents a highly nuanced policy, which affects multiple sectors, stakeholders and trade relationships. This calls for a qualitative research approach which is suited to exploring complex and context-dependent phenomena and its potential unintended consequences. (King 1994, 33.)

Second, qualitative research approach enables exploring the socially constructed meanings for the EU CBAM from different stakeholder perspectives, which also influence its consequences for Finland (Koskinen et al. 2005, 106). The EU CBAM is understood as a phenomenon within a socially constructed reality that is interpreted and produced by individuals, experts, organisations and state actors through cultural meanings (Puusa 2005, 78; Alasuutari 1996, 99). Access to dynamic, shared and individually constructed knowledge of the EU CBAM is considered possible through examining social constructions such as language and shared meanings around the topic (Koskinen et al. 2005, 106).

It is not possible to define a single right method to do qualitative research, rather the methods are often considered to be guided by the purpose and objectives of the research itself and the resources available (Tuomi & Sarajärvi 2009, 43). Nevertheless, qualitative studies are generally characterized by a theoretical framework of the research topic and empirical data most often in textual or textualized form, which the researcher uses to produce meaningful information through their reasoning and inference (Töttö 2004, 9-20). This research is also grounded on these basic elements of qualitative research.

To sum up the research approach, this research employed a qualitative research approach in analysing expert interviews and secondary data to understand the influence of the EU's CBAM on Finnish foreign trade. A qualitative research approach was selected because it is well-suited for exploring a complex, socially constructed and context-dependent phenomenon. As the research approach has been covered, the data collection process is described further in detail in the next section and the analysis, which is based on qualitative content analysis methods, in following section.

4.2 Data collection

As the aim of this study was to explore the influence of the EU's CBAM on Finnish foreign trade, interviews with experts specializing in EU trade policy and the carbon border mechanism were seen as a good way to generate new empiric data related to the research topic. It was also considered useful to support the expert interviews with secondary data that the Finnish government had originally produced for their own needs to gain more holistic understanding of EU CBAM and its influence on Finnish foreign trade.

The primary empirical data for the research was collected through expert interviews. The aim was to generate new and valuable information by drawing on the expert's specialized perspective on EU CBAM and its influence on Finnish companies and Finland's foreign trade (Alastalo & Åkerman 2010, 373–374). It was recognized that the information generated in expert interviews is situation- and value-bound and co-generated, and thus never completely neutral. Moreover, it was acknowledged that wrong information is also possible in expert interviews. Therefore, a critical view of the information gathered in the expert interviews was taken when the data was analyzed. (Alastalo et al. 2017, 219.)

In this research, the interview method chosen was semi-structured interviews which is seen as a good way to explore expert's perspective on CBAM and its influence on Finnish foreign trade. It offers both flexibility and structure to guide the discussion with the experts. (Ma et al. 2021, 91.) The interview questions in this research were formed around the three themes based on research question and its sub-questions; the first theme covered the role of EU trade policy in global climate change action, the second theme focused on the trade partner perspective of the EU CBAM and the third theme explored the EU CBAM's potential consequences for Finland and Finland's foreign trade.

In preparation for the semi-structured expert interviews, a list of questions was drawn up for the interviews to guide the discussion. The general question set is attached as Appendix 1 (in English) and as Appendix 2 (original questions in Finnish). During the interviews, the researcher also remained open and reacted to themes brought up by the interviewees, even if these were not pre-defined, following the approach recommended by Josselson (2013). Thus, the list of predefined questions was not repeated exactly from one interview to the next.

The questions were not provided to the participants beforehand, which enabled flexibility to react to the expert answers through the interviews. It has also been suggested that submitting the questions prior to the interview would increase the likelihood that participants prepare their answers in advance, thus resulting into less spontaneous and authentic responses (Hyvärinen 2017, 38). Yet, the interview topics were told in advance as part of the contact emails so they could make an informed choice about their participation.

In preparation for the expert interviews, a sufficient understanding of the CBAM and EU trade policy was gained through a literature review and by following the ongoing media debate on the CBAM and EU trade policy. This enabled an active and adaptive approach to interview situations, which is recommended to achieve detailed information and rich argumentation in support of the expert's views (Alastalo et al. 2017, 221-224). The interviews were also preceded by familiarization with different interview techniques, focusing on expert and semi-structured interviews, and the roles of different types of interview questions.

Experts were selected based on their expertise and involvement in foreign trade and trade policy within Finnish institutions and organizations with special knowledge on EU CBAM. The participants were identified on the websites of Finnish organizations that deal closely with EU trade policy, which reflects the purposeful sampling approach to finding potential candidates for a study (Glesne 1999, 2830). Some of the interviewees were recommended by those already participating in the research through their professional networks. Invitations to participate were sent via email, where the purpose of the research and data processing was described in detail in the information sheet attached. The information sheet provided for all participants can be seen in Appendix 3.

At the beginning of every interview, the consent of the expert was obtained, and the purpose of the study and the data processing principles were explained once again. It was also explained that it would be still possible to withdraw consent either before the interview or after data collection, in which case the collected data would be used anonymized. Most of the interviews were carried out via Microsoft Teams. One interview was held in-person on the premises of the organisation. With

participants' permission, interviews were video-recorded or audio-recorded to ensure accurate data capture.

Ultimately, the research involved interviews with 5 experts from the Ministry of Foreign Affairs of Finland, the Ministry of Economic Affairs and Employment of Finland, the Confederation of Finnish Industries, Finnish Commerce Federation and SSAB, a global steel company with a significant amount of production in Finland and Sweden. The list of participants and detailed information about the interviews is shown in Table 1. All participants were in senior positions and their work focused on EU trade policy, covering also the EU CBAM. The interviews ranged in duration from 36 minutes to 68 minutes.

The interviews and analysis were conducted partly in parallel, which helped to assess when a sufficient number of interviews had been completed (Hyvärinen 2017, 34). The aim was also to interview an expert from Finnish Customs, which oversees CBAM's implementation in Finland (Finlex 2023). However, an interview with Customs could not be arranged due to their limited availability, as their resources were prioritized to carry out CBAM-related responsibilities.

Table 1 Expert Interviews

Participant	Position	Organization	Interview date and place	Interview duration
Kimmo Järvinen	Head of European Governmental Affairs	SSAB	5.11.2024, Teams	36 minutes
Katja Tuokko	Senior Advisor, Unit for Efficiency, Technology and Emissions Trading, Department for Energy	the Ministry of Economic Affairs and Employment of Finland	6.11.2024, Teams	47 minutes
Malena Sell-Myllyoja	Senior Specialist, Unit for Technology and Sustainability in Department for International Trade	the Ministry of Foreign Affairs of Finland	7.11.2024, face-to-face	68 minutes
Lauri Leskinen	Senior specialist in Energy, Climate, Transport and Trade Policy	Finnish Commerce Federation & the Association of Finnish Technical Traders	11.11.2024, Teams	45 minutes
Kati Ruohomäki	Senior specialist in Green Growth, Energy and Climate: the EU Green Deal and Fit for 55 package	the Confederation of Finnish Industries	11.11.2024, Teams	40 minutes

Participants were not anonymized in the research, which was considered to increase the reliability and transparency of the study. This follows Platt's (1996, 9) idea that mentioning the names of interview participants can be justified by arguing that "who they are is often relevant to what they say". Yet, participants were offered the possibility of anonymization to reduce the barrier to taking part in the research. All participants agreed to have their names visible.

Research using interviews as primary data can be complemented by additional qualitative or quantitative data sources, such as secondary documents produced by various actors (Ruusuvaori et al. 2019, 11; Goel 2021, 3859). Secondary data is defined as "data that has been collected by others, not specifically for the research question at hand" (Harris 2001, 192). This study also opted for collecting secondary data to support the expert interviews. The use of secondary sources was necessary for several reasons. As the data gathered in expert interview presents the experts view of the phenomenon (Alastalo et al. 2017, 219), it was considered that using secondary data to complement it could increase the credibility of findings (Goel 2021, 3862). Additionally, using secondary data provided reliable statistical context that experts might have not recalled precisely or discussed in detail in the interviews.

Table 2 List of secondary data documents

Organization	Publication name	Publication date
the Finnish government	Valtioneuvoston U-kirjelmä U 13/2025 vp and the associated memorandum	24.4.2025
the Finnish government	Hallituksen esitys eduskunnalle HE 99/2024 vp	19.9.2024
the Finnish government	Valtioneuvoston U-kirjelmä U 57/2021 vp	7.10.2021
the Finnish government	Valtioneuvoston U-jatkokirjelmä UJ 34/2022 vp	5.5.2022
Bank of Finland (Mäki-Fränti, P. & Viertola, H.)	Analyysi: Suomi elää puusta, koneista ja palveluista	3.6.2025
Bank of Finland (Koivisto, A. & Salenius, T.)	Kauppasota heikentää suomalaisten vientiyriyten näkymiä	21.5.2025
Bank of Finland (Oinonen, S. & Virén, M.)	Why is Finland lagging behind in export growth?	22.06.2022

The types of documents included in the analysis were Finnish government communications to parliament on EU matters (U-kirjelmät), proposals of Finnish governments and a report from Research Institute of the Finnish Economy on CBAM's impacts and challenges. Three of these

documents, i.e. the earliest ones by the Finnish government in chronological order, were directly recommended during the interviews by Katja Tuokko from the Ministry of Economic Affairs and Employment. The fourth document from the Finnish government was included later, as it was direct continuation of the first three publications. Publications from Bank of Finland were included to offer more specific and sectoral data of Finland's foreign trade. In addition, the Finnish Customs database on foreign trade (ULJAS) statistics was used to retrieve relevant statistics on CBAM imported goods.

4.3 Data analysis

In this research, thematic analysis was used to make explicit the underlying structures and meanings present in the interviews that were first turned into a text-format (Gavin 2008, 4). Data analysis is said to be the most difficult and simultaneously crucial part of qualitative research (Basit 2003, 143). Yet, there is no single, universal way to approach or analyse the empirical data from interviews or secondary data – instead, the analysis process and interpretation of the data should be guided by the research questions (Ruusuvuori et al. 2019, 11). In this thesis, this principle was followed by structuring the analysis around the themes emerging from the interviews that were most relevant to the main research question: “How does the implementation of the European Union's Carbon Border Adjustment Mechanism influence Finnish foreign trade?”.

Analysing qualitative data is described as a dynamic, intuitive, and creative process involving inductive reasoning and theorizing. Rather than being a distinct task reserved for the final stages of research, it is an ongoing activity that evolves throughout the entire course of the research project. (Basit 2003, 143-145, 152). This was also reflected in the progression of the analysis of this study, as the process of interpreting interview data did not begin only after data collection but evolved throughout the research. Initial impressions started to form already during data collection and transcription (Ruusuvuori et al. 2019, 11.).

One of the first more concrete steps in the analysis was to start coding the interview texts. This meant that codes were assigned for topics of interest, i.e. different words, phrases, sentences or sometimes whole paragraphs without linking them to any specific theme (Miles & Huberman 1994, 56). Following the initial round of coding, the data was reviewed again to identify additional relevant codes. Then, the individual codes were then compiled into a single Word document. Finally, the codes were color-coded and assigned to specific themes which can be understood as patterns that are present in the data and relevant for the research question (Braun & Clarke 2006, 79)

Secondary data was employed to supplement the information gathered from the expert interviews, which had already been used to form the themes for the analysis. Additionally in some cases, utilizing secondary data involved more targeted reading, such as when describing Finland's foreign trade based on secondary sources. Otherwise, the analysis method closely followed the same logic as analysing the expert interviews.

The themes that emerged during the analysis were partly based on the thematic structure of the interview guide but ultimately developed beyond it in both content and emphasis. In the end, five main themes were identified: the already observed effects of CBAM, CBAM's influence on the competitiveness of Finnish companies within the EU, CBAM's influence on Finnish companies globally, indirect effects through trade policy responses and ways in which CBAM could better support Finnish companies. The findings from the analysis of data are structured around these themes, so the reader can understand how CBAM influences Finnish foreign trade through its implications on companies and indirectly through trade policy responses.

4.4 Trustworthiness and ethical considerations

As this study is qualitative in nature, there is no statistical data or statistical significance to support the findings. Instead, the trustworthiness of this study is assessed through a structured framework that enables assessing the quality of the research and the results (Eriksson & Kovalainen 2008, 290). In this study, trustworthiness was chosen to be evaluated through a framework established by Lincoln and Guba (1985) which is widely used in qualitative research. This criterion involves assessing four aspects of trustworthiness: credibility, transferability, dependability and confirmability.

The credibility of a study is determined by how well the research results reflect reality (Lincoln & Guba 1985, 296). Therefore, it depends highly on how familiar the researcher is with the research topic to produce new meaningful connections from the data (Eriksson & Kovalainen 2008, 294). In this study, the researcher became closely involved with the research topic by conducting a literature review on the role of trade policy in climate change mitigation, recent developments in the EU's trade policy and climate policy and the CBAM as a policy tool. This familiarity with the research topic helped identifying meaningful patterns in the interview data relevant to the research question. To support the credibility of the study, the data needs to be sufficient to support the results (Eriksson & Kovalainen 2008, 294). To strengthen the credibility of this study, data triangulation was used by combining interview data with secondary data from Finnish government documents on

CBAM, which allowed deeper understanding of the emerging themes in the analysis (Lincoln & Guba 1985, 305).

The dependability of this research can be assessed by how logical and transparent the research process is (Eriksson & Kovalainen 2008, 294). In this study the choices regarding research design, data collection, and analysis have been described in detail while providing arguments for the choices made. Additionally, the use of semi-structured expert interviews supported by secondary data analysis was selected to explore the complex and evolving research topic and the logic for this choice has been explained. These steps support the dependability of this study by making the research process traceable and allowing others to understand or potentially replicate it in a similar context (Lincoln & Guba 1985, 299).

Transferability refers to the applicability of the results to similar research contexts. Therefore, it is important to demonstrate that research is connected to previous research. (Eriksson & Kovalainen 2008, 294.) This study aims to support transferability by offering clear and detailed descriptions of the research context, methods and findings. By focusing on how CBAM influences Finnish foreign trade, the study provides insights that may also be relevant to other small member states. References to academic literature in the intersection of trade policy and climate policy and carbon leakage help show how the findings connect to a broader academic discussion, which allows readers to judge whether the results could apply to other contexts.

Confirmability of the study depends on how well the objectivity of the research is reached; thus, it is concerned with how well the results are supported by the data. To ensure confirmability in this study, close attention was paid to both maintaining a clear and traceable connection between the data and the interpretations and that it was communicated clearly (Eriksson & Kovalainen 2008, 294.) The data analysis process has been described in detail so readers can follow the logic of the research. The findings are based on analysis of the interview and secondary data, which involved multiple rounds of reading the transcripts and the documents, identifying recurring themes and refining the categories throughout the process. A separate document covering the development of the themes was maintained to enhance the trustworthiness of the analysis process. All conclusions were drawn from the categorized and analyzed data. In addition, the researcher aimed to be conscious of their own possible biases surrounding the research topic to minimize their influence in the analysis.

As it can affect the trustworthiness of this study, it should be noted that it is only possible to make estimates of the influence of the carbon border mechanism on Finnish foreign trade before

purchasing CBAM certificate begins and data on changes in trade flows will be available. If the Omnibus initiative presented by the European Commission in February 2025 becomes a reality as regards changes to the EU CBAM, it would exclude a large proportion of Finnish SMEs from the CBAM reporting obligation. In addition, the starting date for the sale of CBAMs would be postponed from January 2026 to February 2027. For the time being, the proposed changes are still waiting for the approval of the European Parliament and the Council, so further modifications are possible.

In this study, expert interviews were carried out with the decision to keep participants' names visible. This was done in full compliance with ethical research principles, including voluntary participation, informed consent and respect for participants (Eriksson & Kovalainen 2008, 290). When experts were first contacted and before the interviews, they were informed about the purpose of the study, how their data would be used and the fact that their names would be visible to readers. The experts also had the opportunity to ask questions and withdraw their consent at any time.

The decision to keep the names of the experts visible was taken on the basis that anonymity would have stripped away some critical context. For instance, George and Bennett (2005) have noted that the identity of the speaker often carries interpretive significance. It is not only what is said that matters, but also who says it, because expertise, authority and institutional position shape the meaning and weight of statements. It was considered that confidentiality and protecting the informants could be respected while naming them as the experts were not private individuals but professionals offering expert insights related to their work and public or semi-public matters. Their consent to their names being shared reflects an understanding of the relatively low risk of harm or invasion of privacy in this context. Still, attention was paid to ensure that all statements are presented accurately and that there was no sensitive information that could harm the participants. This was ensured by allowing interviewees to check their direct quotations and correct any inaccurate information where necessary.

Lastly, it is noted that AI-powered tools were used for checking the tone and the grammar in this study. It also helped to keep the text clear and identify more academically appropriate expressions. However, the researcher was always responsible for the final form of the text. This was done following the University of Turku's (2023) ethical guidelines on using artificial intelligence. Therefore, the use of artificial intelligence to proofread some parts of the text is not considered to reduce the trustworthiness of this study.

5 Findings on CBAM's influence on Finnish foreign trade

5.1 The current state of Finnish foreign trade

Finland's foreign trade remains heavily reliant on goods exports from traditional sectors such as the forest, metal, and chemical industries. Although service exports have grown and now account for roughly one third of total exports, the overall structure of Finnish exports continues to be dominated by industrial goods. These are largely made up of raw materials, intermediate goods, and medium-technology products, such as machinery and industrial equipment. In 2023, just under 38% of Finland's goods exports were classified as medium or high technology, a figure notably lower than in Sweden or in Germany. At the same time, the share of raw materials and intermediate goods is particularly high in Finnish exports to Sweden, Germany and other EU countries.

Recently, Finnish foreign trade has faced both structural and external challenges that have limited its growth. The growth rate of exports has fallen below the global average, partly due to the composition of exported goods and a lack of diversification in export markets. In the 2020s, foreign trade was further disrupted by the COVID-19 pandemic and Russia's invasion of Ukraine, which shook Finland's key export markets and introduced long-term uncertainty. Despite these setbacks, Finnish goods exports have since recovered to a growth rate roughly in line with the EU average.

Geographically, the EU remains Finland's most important export region. In 2024, euro area countries accounted for 38% of the total value of Finnish goods exports. Germany and Sweden are the leading partners within the EU, followed closely by the Netherlands. However, the EU's economic growth has been weak compared to global growth in recent years, which is reflected in Finland's own export performance.

The United States has become an increasingly important trading partner, now accounting for around 10% of Finnish goods exports and ranking as Finland's third largest export destination. This growing reliance also carries risks, as trade tensions and unpredictable tariff policies in the U.S. can significantly affect Finnish exporters. Large international firms are directly affected by such shocks, but also small and medium-sized companies are exposed to indirect consequences. China, meanwhile, is Finland's fifth most important export destination.

The weak growth of Finnish exports also stems from the low processing level and limited technological sophistication of many export products. To achieve more sustainable growth, Finland must aim to increase the share of high-technology and skill-intensive goods in its export portfolio.

5.2 Early impacts of CBAM during the reporting period

As the first trade policy instrument of its kind to link market access directly to a product's environmental performance, the EU CBAM marks a significant milestone in both EU trade policy and world trade. Its symbolic and structural importance was acknowledged in the expert interviews, as it was considered to represent a shift towards integrating climate objectives with trade policy. However, despite its broader relevance, the direct impact on the competitiveness of Finnish companies remains limited at this early stage. Based on the interviews, the most visible effect so far is the new reporting obligation, while other business activities have largely continued without major change. EU CBAM is still in its transitional period and the obligations brought by it for now is mainly to report emissions data of CBAM products exported to the European Commission. As a result, companies have not yet experienced financial or strategic pressures that would force substantial adjustments.

The CBAM reporting obligation began on 1 October 2023, requiring Finnish importers to submit quarterly reports in European Commission's CBAM Transitional Registry. The first reporting period covered emissions from the final quarter of 2023, with a submission deadline of 31 January 2024. By July 2024, approximately half of the Finnish companies subject to CBAM reporting had submitted their reports for this initial period. For the second reporting cycle, covering January to March 2024, the reporting rate had slightly decreased to 45 percent. Technical challenges in the Commission's reporting system partly explain the lower compliance, as some importers experienced access issues during the early months of 2024.

It started off just as badly as we had expected and feared. The mechanism seems really good in theory, but in practice it is extremely difficult to put into action. (Kati Ruohomäki 11.11.2024)

As of mid-2024, around 1900 companies and 200 private individuals had imported CBAM-covered goods into Finland. For the whole year of 2024, CBAM imports from outside the EU accounted for approximately 1.7% of Finland's total imports, which corresponds to 1.3 billion euros. Most of these imports consisted of steel and iron, fertilizers, and aluminum as seen in figure 5. Due to the transitional nature of CBAM, the Commission has allowed importers to use default values to estimate the carbon content of their products. As a result, nearly all Finnish importers relied on these predefined figures in their reports. Consequently, precise data on the actual emissions of imported products is not yet available. Still, the reported estimates suggest relatively modest emission volumes: 80 percent of importers reported less than 10 tonnes of CO₂ emissions and around 91 percent reported less than 100 tonnes.

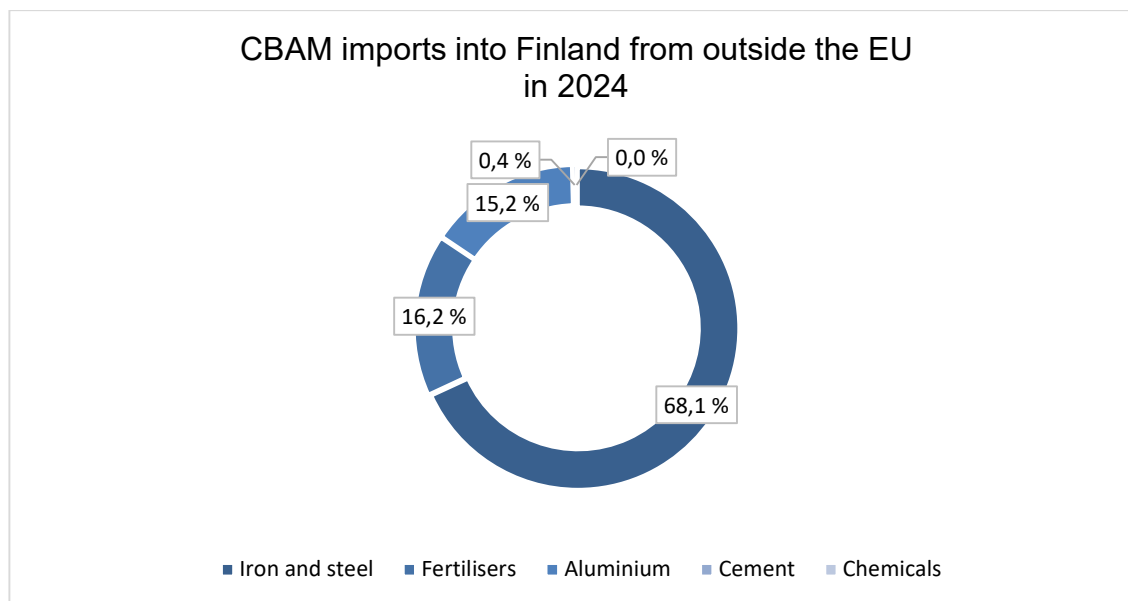


Figure 5 CBAM imports into Finland from outside the EU in 2024 (Finnish Customs 2025)

So far, the reporting obligation represents the most tangible impact of CBAM on the competitiveness of Finnish companies. The reporting required by CBAM requires detailed emissions data, which is estimated to require a disproportionately higher effort for SMEs than for large companies to track and report them in the correct format. The extent to which Finnish importers can fully comply with the CBAM reporting remains an open question. The European Commission's allowance for default values in emissions reporting has led most Finnish importers to rely on these estimates. As reporting requirements tighten and the use of actual CO₂ emissions data becomes mandatory, compliance becomes increasingly complex.

Many third-country suppliers either do not possess the necessary emissions data or are unwilling to disclose it if it could portray them in an unfavorable light. This creates a dilemma for Finnish importers, who must either pressure suppliers for accurate data, face potential penalties without reporting with accurate data, or consider switching suppliers, an option that could lead to increased costs and supply chain disruptions. These challenges highlight the administrative burden CBAM places on Finnish foreign trade, potentially affecting the competitiveness of domestic industries in global markets. However, these challenges are not unique to Finnish importers – companies across other EU member states, especially those in industries with complex global supply chains, are likely facing similar difficulties in obtaining accurate emissions data.

It should be noted that the reporting obligations imposed under CBAM do not exist in isolation. During the previous Commission term, the EU has increased the regulatory requirements for companies to report on different aspects of corporate responsibility. In addition to CBAM,

businesses are also navigating the reporting requirements imposed by e.g. the corporate sustainability reporting directive (CSRD), the deforestation-free products regulation (EUDR), the ecodesign for sustainable products regulation (ESPR) and corporate sustainability due diligence directive (CSDDD) related to human rights and environmental impacts of their operations and value chains. This expanding regulatory environment has raised concerns among Finnish experts about the overall burden placed on companies, especially the smaller ones. Although not all these sustainability requirements are formally applied to small businesses, they often come with an indirect impact on small businesses. This is because larger firms rely on their suppliers for the necessary data to fulfil their own reporting obligations. As a result, even small companies with often limited administrative capacity are handling now a growing volume of information requests from their upstream partners. For instance, some small import firms with around twenty employees are reportedly producing between 50 and 200 Excel reports per week to respond to customer data requests. This takes resources away from other areas in small businesses where resources are already limited, as illustrated by one of the experts interviewed:

It [EU CBAM] is more work, there is no point in sugarcoating it. For example, importing companies such as those represented by our members often employ around 20 employees and import different grades of steel from outside the EU. As a result, they need to recruit someone deal with the reporting and monitoring obligations. The new hire could be in sales, but instead they have to file reports as this is binding legislation. (Lauri Leskinen 11.11.2024)

Several experts emphasized that CBAM has not yet triggered any large-scale investment shift toward the EU internal market. For example, steel procurement has not significantly moved within the EU, as building new production capacity remains a costly and long-term process. At the same time, one interviewee pointed out that, at least in the case of steel, there is no immediate need for additional capacity in the internal market. Current production capacity in Europe is considered sufficient and utilisation rates remain relatively low.

5.3 Competitiveness of Finnish companies globally

The ability of the EU CBAM to support and maintain the competitiveness of Finnish companies in international markets was almost invariably one of the key questions in the interviews and secondary data. With varying degrees of severity, CBAM was perceived as a potential risk for Finnish companies using CBAM products as intermediate goods, including a major proportion of Finnish machine shops in the long term. It is considered likely that CBAM will increase the prices of CBAM imported products, which will also be further reflected in the prices of final products. In

addition to the purchase of CBAM certificates, the increased reporting requirements arising from CBAM will increase the compliance costs for companies. Rising costs can be particularly burdensome for small and medium-sized enterprises and affect their ability to innovate and succeed in international markets.

If CBAM costs significantly increase the price of CBAM imports and Finnish companies using CBAM imports cannot internalize the price increase to their exports outside the EU, it is possible that a "dual market effect" will occur. This would involve, in the long term, a shift of production from Finland to outside the EU. The fact that CBAM does not include tools to minimize the risk of production shifting outside the EU is seen as a major shortcoming of the mechanism. This risk is considered even higher due to the higher energy prices in Europe following the energy crisis. The dual market effect was seen as likely by industry representatives in the long term:

If a Finnish company [using imported CBAM products as intermediate] exports to Asia, for instance, they will no longer produce here in Europe in the future, but they shift their production to Asia simply because it makes logistical and economic sense. (Lauri Leskinen 11.11.2024)

For some Finnish companies, an important question is whether they will continue importing CBAM products or relocate their production elsewhere, and how this [CBAM] will affect their cost structure. This depends, for example, on where their customers are located; whether they are in the internal market or in third countries. (Katja Tuokko 6.11.2024)

As in the transitional phase, reporting requirements for imported CBAM products will continue to impose additional administrative tasks on companies and add to their compliance costs. In contrast to the transitional period, the Commission allows using default values instead of actual emissions data as the definitive phase of EU CBAM begins in 2026. This simplification may offer limited relief for the companies, as the default values are expected to be set higher than the average emissions for the relevant CBAM product category in the country of origin. This will act as a form of penalty and is intended to incentivize companies to report actual emissions instead. However, the use of actual emissions data during the operational phase will require third-party verification, which is expected to further increase compliance costs for businesses.

Beyond rising costs, another concern is the availability of raw materials for Finnish producers. If CBAM and its reporting requirements make imports into the EU significantly more difficult, there is a risk that suppliers from third countries will redirect their materials to less regulated markets, leading to supply shortages within the EU. As noted by Lauri Leskinen, "Chinese steel will certainly find buyers elsewhere". This could be problematic for also for Finnish industries, as

changing supply chains requires resources and securing alternative sources within Europe may not be feasible in the short term. On the other hand, according to Malena Sell-Myllyoja, there is enormous overcapacity in steel in China and Indonesia, so in light of this, there will not necessarily be a shortage of steel with the introduction of CBAM.

5.4 CBAM's influence on the competition within the EU

Although the CBAM is expected to have the greatest long-term impact on trade between the EU and third countries, the mechanism can also be seen to have an impact within the Union itself. In principle, CBAM is a harmonized regulation applied uniformly across the EU which is intended to apply to all companies operating in member states. It is expected that the administrative workload and cost impacts will be distributed evenly across the Union, thus preserving the competitiveness of Finnish industry relative to other EU countries. However, emerging discrepancies in the interpretation and enforcement of EU CBAM legislation between member states are already becoming apparent, as companies and officials in Finland report of seeing differences in how the rules are interpreted and enforced in different EU member states. The uneven implementation of CBAM poses a risk of distorting competition between member states, creating a disadvantage for Finland and for other member states that are more rigorous in following the rules.

According to experts, Finland has positioned itself at the forefront of CBAM enforcement. This is reflected, for example, in the fact that the Finnish customs authority was among the first competent national bodies designated for CBAM implementation. When the first reporting phase had already started, many EU countries had not defined a CBAM enforcement authority. The quality of the work done by Finnish customs is demonstrated by the fact that companies from other member states also use the CBAM section of the Finnish customs website for guidance and advice for their reporting. According to the experts, Finnish customs has done an excellent job in making companies aware of the CBAM reporting obligation by providing comprehensive information and contacting them directly when necessary. In general, the Finnish tradition of rule compliance and high institutional trust was also considered to support the diligent implementation of CBAM in Finland by both authorities and companies.

There is a risk that customs practices and interpretations of the CBAM regulation may vary across EU member states over time. Some experts noted that in some member states, such as in Southern Europe, authorities have already adopted a more flexible approach to CBAM implementation than Finland. For instance, bigger member states like France have continued to allow the use of default emissions values beyond the original phase-out timeline set by the European Commission. In

contrast, Finnish importers are already expected to comply using actual emissions data, which is significantly more demanding to collect and report. This raises concerns among Finnish experts whether importing CBAM-covered products to other member states is going to become comparatively less burdensome than to Finland, when the definitive period begins.

There is a risk that member states' interpretations will change and that there will be different customs practices within the EU, which would obviously cause problems for our companies. (Kati Ruohomäki 11.11.2024)

However, it is to Finnish companies' advantage that the trust and close cooperation between public authorities and businesses forms a more constructive CBAM implementation environment in Finland. For example, one expert pointed out that Finnish Customs takes a guiding rather than punitive approach: when irregularities are detected, the primary reaction is not to impose immediate sanctions, but rather to give companies the opportunity to correct the situation. This is not the norm in every EU member state.

There is also concern among the experts that larger member states are better equipped to protect their industries from CBAM-related costs through state aid schemes. Currently, no direct compensation system for indirect costs of CBAM is planned for exports outside the EU due to its incompatibility with WTO rules. Simultaneously, the free allocation of emission allowances is also being phased out, which has so far prevented the relocation of production outside the EU. Yet, countries like France have actively lobbied for compensation mechanisms to offset additional financial burden caused by CBAM, particularly for energy-intensive sectors. In the absence of a coordinated EU-wide compensation scheme, some experts expect that large member states will introduce their own state aid measures, thus following the broader EU trend of state-supported industrial policy. This type of development risks undermining the relative competitiveness of Finnish companies within the internal market, as smaller member states like Finland lack the fiscal capacity to compete with such support measures.

Finland is not enthusiastic about this development [increased use of state aid measures]. In comparison to smaller member states, larger member states have the opportunity to grant larger subsidies, which could affect the competitive situation within the EU. (Malena Sell-Myllyoja 7.11.2024)

5.5 Responses of the EU's trading partners to the CBAM

The introduction of CBAM may also have an indirect impact on Finland's foreign trade through varying reactions from the EU's trade partners. As one expert noted, although CBAM has its environmental objective, it also functions as a form of trade barrier. So far, it has not led to any

direct trade retaliation measures from non-EU countries. Possible trade retaliation measures are more likely to occur after the transitional phase ends, when obtaining CBAM certificates becomes mandatory for imports subject to the mechanism.

The threat of a trade war portrayed in the media was not perceived as particularly serious because of CBAM. For example, the re-election of US President Trump or EU tariffs on electric cars for China were seen as more significant factors that could lead to more unpredictable consequences.

Nevertheless, no one ruled out the risk that CBAM would lead to retaliatory measures by other countries. After all, CBAM is going to be fully implemented in the context of changing international trade, which is increasingly shaped by geopolitical tensions and the strategic use of trade policy to serve national interests. In this already sensitive global context, the responses of EU trade partners may depend on factors such as how their domestic carbon pricing systems are recognised or treated under the CBAM framework by EU. This could also have unexpected consequences for Finland's foreign trade and the economic operating conditions of many Finnish companies.

The EU CBAM is the first of its kind, which means there is currently limited evidence regarding how such trade policy instruments are received internationally once they are fully implemented. CBAM presents a shift too in the European Union's trade policy, which has for decades prioritized open trade. This explains partially why the adoption of the mechanism into EU law was not straightforward. Within DG Trade, which oversees the EU's common trade policy, there was strong opposition to CBAM until the first Commission led by Ursula von der Leyen included the mechanism in the EU's trade policy agenda as a key element of the European Green Deal. It is therefore somewhat surprising that the EU has ended up using its trade policy as leverage for its climate objectives. This development may also have been unexpected for some countries, given the European Union's longstanding commitment to free trade and adherence to common international rules.

However, the experts emphasized that while CBAM is a form of trade barrier, it should be understood as part of a broader continuum of the EU's ambitious climate actions. The EU's climate leadership was seen as stemming from its strong political commitment to addressing climate change and the substantial progress it has already achieved. This is reflected, for example, in the fact that the EU was the first region to establish a large-scale emissions trading system, which has since served as a model for similar systems in other parts of the world:

The EU has shown that it is possible to achieve economic growth while at the same time reducing emissions, which already started to show in the 1990s. It is probably the greatest example that the EU can show the world that it is possible. (Katja Tuokko 6.11.2024)

In this context, CBAM can be viewed not simply as a trade barrier, but as an extension of the EU's long-time commitment and work on global climate change mitigation efforts. This is also the narrative that the European Commission has tried to emphasize in its dialogue with the EU's trading partners since the introduction of the mechanism.

When the EU first announced its proposal for the CBAM, the first reactions from many countries, particularly India, China and several developing nations, were highly critical. These countries expressed concerns that CBAM would function as a form of green protectionism and create new barriers to trade. Many developing countries also saw the mechanism as fundamentally unfair. This perceived unfairness stems from the idea of the principle of common but differentiated responsibilities (CBDR), which originates from the United Nations Framework Convention on Climate Change (UNFCCC). Under this principle, all countries share a common overall object of addressing climate change, but their responsibilities vary according to their historical emissions and level of development. From the perspective of many developing countries, CBAM fails to address these differentiated responsibilities, as it requires all exporters to purchase CBAM certificates based solely on the emission levels of their products, without taking into account the economic development stage of the country of origin. On the other hand, from the perspective of the EU, the CBDR is not legally directly applicable in the WTO context, as it has emerged from a different legal framework.

The overall tone of international reactions appears to have shifted since EU first announced CBAM. According to experts, there has been a shift from outright resistance to a growing recognition that the CBAM is a permanent fixture that must be acknowledged and integrated into policy strategies. Many countries, despite their initial reservations, recognize the EU's significance as an export market and are therefore motivated to find ways to adapt to CBAM to maintain access to the European market.

Recently, much of the discussion has centered more on questions of interoperability and the comparability of national climate measures with EU CBAM. Under the EU CBAM legislation, a full or partial exemption of obligation to purchase CBAM certificates is possible if the exporting country has a carbon pricing system in place. This relief is calculated by multiplying the embedded

emissions of the imported goods by the carbon price already paid in the country of origin that is considered deductible under the CBAM framework.

However, recognizing full equivalence of other countries' carbon pricing systems is complex. For instance, even though China has launched a national carbon market, concerns remain regarding the accuracy, transparency and effective enforcement of the system, particularly in terms of whether carbon costs are truly passed through to enterprises at a level comparable to the EU ETS. Reliable information on the functioning and impact of such systems is often difficult to obtain. Yet, if the EU evaluates a third country's measures as insufficient such as China's, tensions may arise.

This is, of course, a sensitive issue, what [type of climate measures] is satisfactory for the EU and what is not. It can also cause different reactions: if a trading partner believes its climate measures are sufficient and the EU does not, then who is the EU here to say so. (Kati Ruohomäki 11.11.2024)

Additionally, many trading partners have implemented alternative climate policies rather than a direct carbon pricing mechanism. For example, the United States has introduced incentive-based measures, such as tax credits for clean technologies under the Inflation Reduction Act, IRA. If the EU were to treat such incentives as equivalent to the purchase of emissions allowances under the EU ETS, it could create competitive distortions, favouring foreign companies that receive financial incentives to achieve national climate goals over companies in the EU that are required to pay for carbon emissions. Many experts interviewed pointed out that such an approach would not be desirable, as it would seriously undermine the level playing field that CBAM seeks to establish.

To date, the experts saw that EU CBAM's greatest achievement has been its ability to drive a global shift in thinking environmental impacts of production. As a result of CBAM, many companies exporting to the EU have had to assess more closely the environmental impact of their production. Additionally, the introduction of EU CBAM has also resulted in positive development of similar systems for carbon border adjustment and emissions trading outside of the EU.

5.6 Aligning CBAM to support Finnish foreign trade

Finland and Finnish companies have had limited possibilities to shape what kind of policy instrument CBAM has become. This is because CBAM is an EU-level instrument which is not part of Finland's trade policy competences. Still, Finnish authorities have closely participated in the process by formulating and promoting national positions to be presented at the EU-level. When regulation on establishing a CBAM took place, Finland's Ministry of Finance was responsible for representing Finland's views at the EU-level. Later, the Ministry of Economic Affairs and

Employment of Finland took over the main responsibility for domestic implementation. A national working group was set up to involve stakeholders and other relevant Finnish Ministries, led by the Ministry of Economic Affairs and Employment, with representatives from relevant ministries and major industry associations such as energy, chemicals, technology and forestry. In the working group, stakeholders have had the opportunity to comment on Finland's draft positions before their submission to Parliament, which has helped to ensure that national position papers reflect also the practical concerns of the business community.

From the beginning, Finnish policymakers and industry representatives have emphasized a cautious and phased approach to CBAM implementation. After all, CBAM represents an entirely new type of legislation that combines elements of climate and trade policy, with no existing real-world model to use as a benchmark for assessing its potential impacts. Therefore, the Finnish government supported starting with a narrow set of emission intensive products which would have served as a pilot phase. It would have enabled businesses and authorities to adapt to the system gradually, while keeping administrative complexity low and allowing time to assess the economic and environmental effects of the mechanism in practice. Contrary to the hopes of many industry representatives and Finland's position, the final CBAM regulation turned out to be broader than expected, as it was extended to a wide range of carbon-intensive products: iron and steel, aluminium, cement, fertilisers, electricity and hydrogen.

The Commission's preparation of the CBAM legislation was also considered too fast by the experts. The tight timeframe for legislative preparation can be seen as a contributing factor to the European Commission's incomplete assessment of CBAM's potential impacts. All experts interviewed pointed out that a more thorough impact assessment by the Commission should have been carried out. Originally, the Commission had estimated that around 2 000 CBAM-liable importers would be affected in the EU. By contrast, in Finland alone, more than 3 000 importers are already subject to the mechanism which illustrates how the scope of the regulation was significantly underestimated by the Commission.

The tight legislative schedule and incomplete impact assessment led to many technical shortcomings, many of which were introduced at a late stage in the process. One frequently cited issue was the unexpected expansion of CBAM's product scope. In addition to core raw materials such as steel and cement, the mechanism was extended to include certain downstream products, such as bolts and screws, which some experts argued to increase the administrative burden for importers without clear added environmental value or impact assessment.

Another technical issue highlighted by experts was the low value threshold for CBAM-covered imports. Under the current CBAM legislation, imports valued under 150 € are exempt from reporting requirements. This threshold was seen as too low to have any meaningful effect in terms of environmental impact, while still generating considerable administrative obligations for businesses. Several interviewees suggested that the threshold should either be raised substantially or replaced with a mass-based exemption model, since customs authorities already collect weight data on imports. Such an adjustment would better reflect the mechanism's core objective of reducing emissions, rather than creating an excessive administrative burden for small importers.

Yet, this incompleteness of the tool, as perceived by the experts, makes it possible to influence the CBAM and its details while the details of the regulation are still evolving. The regulation itself provides a vague framework for what this mechanism will look like, but many details are still to be agreed and clarified. Thus, the future of CBAM is still open and the stakeholders will continue to influence the shape of the mechanism. How well CBAM will support Finland and its foreign trade in the future will depend on Finnish stakeholders' ability to maintain an active and coordinated presence in ongoing CBAM development.

The weakness of it [CBAM] is that it is complex and still incomplete. It was let out of the Commission's hands as unfinished. But that means that almost anything can still happen to it. (Kimmo Järvinen 5.11.2024)

I think the mechanism is here to stay, as long as we can make it a little more functional in terms of these practical issues. (Kati Ruohomäki 11.11.2024)

One of most important issues for the Finnish industries is still how exports outside the EU will be treated in the future as CBAM gradually replaces free allocation of EU ETS. While the mechanism addresses carbon leakage risks by creating a level playing field between production within EU's internal market and exports, it does not offer any relief for emissions-intensive products destined for markets outside the EU – despite the fact that production within the EU is generally subject to much stricter environmental regulation than in many export destinations. From the perspective of sectors such as steel, this creates challenges to remain competitive, as these firms must internalize emission allowance costs that their international competitors do not necessarily face in the global markets:

Free allocation of EU ETS is not perfect, but it is an important component in reducing costs for our operation. (Kimmo Järvinen 5.11.2024)

Therefore, Finnish industry stakeholders have argued that maintaining free allocation, at least for the share of production destined for export markets, should remain in place or should not be lowered until it can be assured that the CBAM will provide equivalent protection for industry and

for Finnish exports. While they recognize that combining CBAM and free allocation under the EU ETS may raise legal questions under WTO rules, they point out that their coexistence is not explicitly prohibited by international trade law. However, it should be noted that Finland has officially advocated for CBAM to replace free allocation in the EU ETS.

The continuation of free allocation under the EU Emissions Trading System or the introduction of direct export subsidies appears unlikely at present, despite expressed interest from Finnish industry representatives. Discussions around possible export support had already taken place during the original CBAM negotiations. Countries such as France were active advocating for such measures, but in the end WTO compatibility was considered too high a risk for this. It should be noted that a portion of the EU's Innovation Fund, financed by the revenue from the sale of emission allowances, is reserved for supporting technical innovations within the affected sectors. However, this does not constitute a direct subsidy. Instead, the funding is allocated to selected innovation projects through a competitive application process. Whether the innovation fund supports Finnish exports depends on the ability of Finnish companies to compete with other European applicants.

Although there will be no direct aid to support exports affected by CBAM to replace the phase-out of free allocation emission allowances, there are other ways to support the companies in the form of structural and market-based solutions. These include ensuring affordable access to electricity, which is an important element of competitiveness for these companies. Additionally, some experts propose the strategic use of public procurement to support and create stable demand for low-carbon domestic industries. Such an approach would help promote cleaner domestic production over more carbon-intensive imports, without resulting into protectionism. However, such an approach would require a shift in the mindset among public sector decision-makers, where procurement choices would not only be driven by cost considerations but also by wider environmental and sustainability objectives.

The future direction of CBAM remains open, with a formal review scheduled by the Commission before the conclusion of the transitional reporting period. As a part of this review, the Commission is currently considering the potential expansion of CBAM's current scope to downstream products, i.e. more complex end products such as those in the automotive industry in the case of steel and aluminum. The inclusion of polymers, i.e. plastics, which were already part of the last round of CBAM negotiations, is also being considered. Moreover, the Commission has signalled its intention to extend the CBAM to cover indirect emissions from aluminium, steel, iron, and hydrogen, which are currently excluded from the mechanism, although no definitive timeline for this expansion has

been announced yet. In practice, this would mean that the energy used to manufacture these products would also be taken into account in the mechanism in the future, which would lead to even higher cost associated with CBAM. The inclusion of logistics has also been discussed. The new second Commission under Ursula von der Leyen and its new priorities are also likely to be reflected in the development of CBAM.

Experts were cautious about expanding CBAM from its current scope, with many saying that the main focus is still on the functionality of the reporting phase or getting existing CBAM shortcomings fixed. However, experts stressed the importance of in-depth impact assessments before expanding CBAM to more complex product categories. As a country, Finland has not yet formed an official position on the next phase of the mechanism. The inclusion of logistics was considered unlikely in the near future due to its high complexity. Similarly, the inclusion of plastics was seen as difficult, as there is not yet a fully harmonized picture within the EU. From the perspective of carbon leakage prevention, a logical starting point for the inclusion of indirect emissions would be the highest-emitting products. In this respect, aluminium could be a good starting point, as indirect emissions make up a significant part of its overall carbon footprint. There is some understanding and acceptance of the future expansion of CBAM, even if it raises concerns among the experts about the economic impact on businesses:

I think that everyone secretly knows that this will expand at some point in time. The question is then when and where. (Lauri Leskinen 11.11.2024)

A major challenge of CBAM lies in its reporting requirements. Especially for smaller firms, the workload of reporting is disproportionately high when other overlapping mandatory reporting obligations are taken into account. To address the challenges with reporting, some experts suggested focusing on the development of more digitally streamlined and interoperable systems. For instance, artificial intelligence could be integrated into the various reporting platforms to reduce the reliance on manual input and manage large volumes of data more efficiently. The EU is also developing digital product passports as part of the EU's Ecodesign for Sustainable Products Regulation. Digital product passports are going to involve highly detailed product life-cycle data across the value chain on used materials, origins and environmental performance. One of the experts suggested that this could be extended to other regulatory frameworks, which would reduce administrative overlap and create the necessary synergies:

If we have a lifecycle product passport for a lot of products in any case, it would be logical to integrate the data required under various regulatory frameworks into a single and standardized format and use it at customs. (Malena Sell-Myllyoja 7.11.2024)

Finnish Customs has played an important role in sharing practical and clear information on EU CBAM and the reporting by compiling extensive information on its website and organizing webinars for Finnish companies. It is therefore important to ensure that Finnish Customs has sufficient resources to continue to support Finnish companies in meeting their reporting obligations. This will become even more important if CBAM expands or undergoes significant changes.

In the longer term, the establishment of a centralized EU-wide customs data infrastructure could further support the reduction of administrative burdens. Moreover, a single EU-level customs portal would facilitate more consistent and efficient data exchange between customs authorities and reduce regulatory fragmentation between member states, ensuring that CBAM legislation is also complied with in the same way across the EU. However, this is expected by 2031 at the earliest.

If the Omnibus initiative, presented by the European Commission in February 2025, is adopted in its current form, it would significantly ease the administrative burden of the EU CBAM by exempting a large proportion of Finnish SMEs from its scope. This would help resolve many of the reported challenges related to the current reporting obligations. For the time being, the proposed changes are still waiting for the approval of the European Parliament and the Council, so further modifications are possible.

6 Conclusions

6.1 Theoretical contribution

This thesis contributes to the academic discussion around trade policy measures used for climate change mitigation by analyzing EU CBAM and its influence on Finnish foreign trade. This study provides a country-specific perspective and focuses on a single member state that has not been extensively studied in the light of the latest information on CBAM.

The aim of this study was to explore how does the implementation of the EU's CBAM influence Finnish foreign trade. The main question was approached by three sub-questions. The first sub-question was about how trade policy can be used to promote a green transition. The findings support the view that that trade policy is increasingly being used as a tool to address climate change. This reflects a paradigmatic shift where the urgency of climate change is putting pressure on all areas of policy, including trade, to align with environmental goals. Simultaneously, the slow progress in multilateral climate efforts is leading countries to act independently and using trade measures to pursue environmental goals.

There is a range of trade policy tools available for supporting green transition. These include liberalizing trade in environmental goods and services, reforming harmful subsidies, promoting green public procurement, introducing carbon border adjustments, and harmonizing environmental standards. In literature, CBAMs are often discussed in terms of the trade-distorting risks they pose through increasing tensions between countries (e.g. Cornago & Berg 2024; Felbermayr et al. 2019), while their environmental benefits are debated in terms of their ability to reduce carbon leakage. For instance, (Fischer & Fox 2012) and (Winchester et al. 2011) find that CBAMs' effectiveness in preventing carbon leakage is either negligible or modest. This study adds to the discussion by confirming that the reactions of trade partners to the EU's CBAM are not only negative. Instead, EU CBAM have prompted other countries to consider or adopt similar policies and thus added the mechanism's environmental significance. As Droege and Panezi (2022) have suggested, this could ultimately lead into a reduced need for EU CBAM in the long term, if the carbon pricing initiatives continue to develop globally.

The second sub-question addresses how the introduction of EU CBAM has altered the EU trade policy framework. Within the European Commission itself, CBAM initially faced resistance, particularly from DG Trade. It was only under the first Commission led by Ursula von der Leyen that CBAM was integrated into the EU's trade policy agenda as part of the European Green Deal.

For Finland, this development has meant limited room to influence the mechanism, even though its export-oriented industries may be affected. From early on, Finnish policymakers and industry representatives have called for a cautious and phased implementation of CBAM, to avoid the negative effects on competitiveness of Finnish companies globally and within the EU. In this regard, the Commission's proposed Omnibus initiative represents a potentially important step forward. By proposing to exclude a significant number of SMEs from CBAM's reporting obligations through introducing a cumulative annual import threshold of 50 tonnes per importer, it responds to concerns raised by member states such as Finland about reducing the administrative burden of smaller actors. The threshold proposed in the Omnibus is not grounded in existing theoretical discussions on preventing carbon leakage. It remains to be seen whether such simplification will preserve the environmental goal of the mechanism.

The third sub-question focused on how the adverse effects of CBAM on the competitiveness of companies could be mitigated. According to Zhong & Pei (2022, 10-11), EU CBAM can reduce carbon leakage through preserving the competitiveness of EU production. In this light, although the EU portrays CBAM as climate policy tool, its role in safeguarding competitiveness is also central to its functioning. In order to minimize trade policy retaliation, it is important not to use actionable or prohibited subsidy alongside CBAM (Droege & Panezi 2022). Yet, many experts saw it likely that some larger EU Member States are going to make use of state aid measures to support their industries. In comparison, smaller Member States have more constrained fiscal and administrative capacity to do so. Possible ways to better align the mechanism with Finnish companies' competitiveness are discussed as part of the policy implications of this thesis.

To answer the main research question, the implementation of the EU's CBAM is expected to influence Finnish foreign trade in multiple ways. It may create opportunities for companies whose end products are primarily sold within the EU internal market, especially if they currently face competition from lower-cost, higher-emission imports. However, CBAM poses significant challenges for globally operating Finnish companies with substantial exports outside the EU. In the long term, it could encourage increased trade within the EU but also risk a dual market effect, which could potentially shift production outside the EU. In addition, SMEs have reported that CBAM has already created an additional administrative burden, which ties up their limited resources and may affect their competitiveness and innovation capacity. For now, trade has continued as usual, as purchasing CBAM allowances has not begun yet.

6.2 Policy implications

The findings of this thesis offer some valuable insights for policymaking concerning the future of EU CBAM and how it could better support Finnish businesses competitiveness in foreign trade. These relate to three main areas for improvement: reducing the administrative burden of reporting, the need for uniform application of EU CBAM across EU member states and the question of exports.

The administrative burden associated with CBAM, together with other EU sustainability reporting requirements, emerged as one of the most concrete challenges for Finnish businesses are facing now. This is especially burdensome for SMEs which have limited resources. While import flows have largely continued unaffected and indirect costs have been manageable, the resource-intensive nature of reporting may limit long-term innovation capacity which is crucial for maintaining Finland's competitiveness globally. Therefore, the question of how to avoid excessive administrative strain needs to be addressed. The Commission's Omnibus proposal, which would exempt a significant proportion of SMEs, is a step forward in this respect, although its effectiveness in preventing carbon leakage remains to be seen. Ensuring sufficient resources for Finnish customs authorities remains important, as they have been instrumental in providing training and clear information to Finnish CBAM importers. In addition, digitalisation, automation and artificial intelligence can offer ways to streamline reporting for companies and authorities in developing reporting portals. In the future, the development of a single reporting portal could significantly reduce overlapping reporting obligations, thus keeping the administrative burden on businesses moderate.

For Finnish businesses, it is crucial that the implementation of CBAM is uniform across all member states. So far, some larger member states have unilaterally deviated from the joint timetables, for instance by allowing the use of default values longer than intended. If the trend continues, this could disadvantage the early adopters such as Finnish companies that have not been granted such exemption by their national authorities. Therefore, Finland should continue advocating for sufficient EU-level coordination for implementation of EU CBAM and respecting common EU-level rules. As there is an ongoing discussion on expanding CBAM's current product scope, this becomes even more important. In case of expanding CBAM's scope, it must follow a phased rollout approach with realistic timelines and impact assessments that all member states can follow. A clear and predictable policy framework will allow Finnish firms to adapt to reporting requirements and invest in low-carbon solutions.

The current design of the CBAM in addressing carbon leakage leaves a significant gap regarding exports. Previously, the competitiveness of EU-based exporters was supported through the free allocation of EU ETS allowances. Now, this free allocation is being phased out. While industry stakeholders advocate for the continuation of free allowances to preserve export competitiveness, it is recognized at the EU-level that maintaining such support alongside the CBAM could be interpreted as a form of production subsidy and raise concerns about potential protectionism under WTO rules. This creates a need to support Finnish export-oriented producers through alternative means. In the absence of an export rebate or compensation mechanism within CBAM, it is essential to sustain firms' innovation capacity and sustain demand for low-emission products. One approach is to revise public procurement criteria to favour climate-friendly solutions. In addition, ensuring access to affordable electricity remains crucial for many Finnish producers. Moreover, there needs to be more financial instruments to finance investments to moving to low-carbon technologies.

6.3 Limitations and possibilities for future research

This thesis adds to the current academic discussion by exploring the influence of EU CBAM on Finnish foreign trade by analysing semi-structured expert interviews and complementing these by secondary data analysis of Finnish government documents on CBAM. There are still some limitations that apply to this study. Before the study was undertaken, the legal issues related to the EU CBAM were excluded. Additionally, it was noted that the actual impacts of the CBAM during the definitive regime cannot be analysed, as CBAM fees are not in place until 2026. Therefore, CBAM's influence on Finnish foreign trade is discussed in the light of expert estimations and previous literature.

During the research process, the European Commission presented its Omnibus legislative package which aims to simplify existing EU-level regulation for enhancing the competitiveness of European businesses. This would bring significant changes to EU CBAM, by most notably introducing a cumulative annual import threshold of 50 tonnes per importer. It would exempt approximately 90 percent of importers from CBAM obligations, excluding mostly SMEs. The legislation is still in the process of being adopted and before the changes become certain, the bill must be approved by the European Parliament and the Council of the EU. Although the changes have been discussed as part of this study, they were missing in expert interviews as the proposal came only after them. Therefore, the analysis concerning Omnibus is rather brief and based only on the analysis of secondary data. This limitation highlights the need for further research on CBAM after the changes become legally binding.

Furthermore, the European Commission is currently assessing the possible extension of CBAM to other sectors of the ETS, downstream products and indirect emissions. However, as no draft law on these matters is currently available in the public, it is not analysed in detail what these changes would mean for Finnish foreign trade in this study. Future research could examine the effects of the proposed legal changes once more concrete information becomes available.

Another limitation concerns the limited number of expert interviews. It should be noted that the aim of the study was not to produce generalizable findings, but rather to explore the ways EU CBAM could influence Finnish foreign trade. Despite this, a certain level of thematic saturation was observed, as many experts raised similar concerns and perspectives in the interviews. It should also be noted that most participants represented specific viewpoints, such as industry associations with specific sectoral interests. The background of the experts was taken into account during the analysis in order to maintain the objectivity of the results. Future studies could combine qualitative interviews with quantitative surveys to reach a larger pool of respondents, which would offer a more representative analysis of CBAM's expected influence on Finnish trade.

It is acknowledged that the scope of the study could have been more narrowly defined, and this research can be seen to take more of an exploratory character. Therefore, there remains a need for more in-depth research on specific aspects of the mechanism and its implications on Finnish foreign trade. For instance, future studies could build on this study by analyzing CBAM's influence on specific Finnish sector or product group. Also, another way would be to conduct a case study with a Finnish producer, which would enable analyzing e.g. the location of its customers and the effects of EU CBAM. Additionally, the potential expansion of CBAM's scope to new product categories such as organic chemicals and polymers could be studied further. As this is still under discussion, it could bring useful information for policymaking.

7 Summary

The European Union has taken significant steps in addressing climate change, which includes the adoption of first large-scale emissions trading system in the world, EU ETS. Despite the progress in climate change mitigation at a global level, the level of ambition in climate action continues to vary internationally. This places European companies at a competitive disadvantage compared to international firms, as production costs tend to be generally lower in countries with less stringent climate regulations. To balance the competitive playing field between the EU and third countries, the EU has introduced CBAM which will require purchasing certificates for imported CBAM products outside the EU from 2026.

Adopting a completely new policy instrument in the area of trade policy and climate policy can significantly influence the foreign trade of small export dependent member states such as Finland. The aim of the study was to find an answer to the research question: How does the implementation of the European Union's Carbon Border Adjustment Mechanism influence Finnish foreign trade? The study first established the research context of EU trade policy in addressing climate change through a literature review, by examining the role of trade policy in climate change mitigation, carbon leakage and the academic debate on the mechanism.

To add to the current academic discussion, five thematic expert interviews were conducted, analyzed and complemented by secondary data analysis of Finnish government documents on CBAM. The findings from the qualitative research suggest that the most tangible impact of the EU CBAM on Finnish businesses thus far has been the administrative costs from reporting obligation, which should be considered as a part of a broader corporate sustainability reporting context coming from the EU. It appears that imports of CBAM products have continued as business as usual and businesses have been able to absorb indirect costs of CBAM implementation. More long-term impacts are going to be seen, when the purchase of CBAM certificates becomes mandatory and the free allocation of EU ETS is phased out, removing support for Finnish businesses of CBAM goods targeted for international markets.

This thesis has some practical implications for policymakers. First, EU-level sustainability reporting must be streamlined through digitalisation and combining existing reporting requirements with a goal of single portal. Second, the mechanism's implementation must be consistent across the EU to prevent firms in stricter member states from being placed at a competitive disadvantage. If the scope of the mechanism is expanded, it should follow a phased approach with realistic timelines and

comprehensive impact assessments. Finally, to maintain the competitiveness of Finnish export-oriented companies affected by the phasing out of free EU ETS allocations, policymakers should consider supporting them through other means, such as ensuring access to affordable energy, reviewing public procurement criteria and increasing support for green investments.

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Appendices

Appendix 1 Interview questions translated into English

1. What is your background and what kind of work are you currently doing?
2. Theme 1: The European Union and the role of EU trade policy in climate change
 - a. What is the role of the European Union (the EU) and its trade in the world? What role does the EU play in the fight against climate change globally?
 - b. What role does trade policy have for the European Union? How would you describe how the EU's trade policy has changed in recent years?
 - c. How the European Union's new carbon border mechanism (the EU CBAM) has changed the EU's trade policy?
3. Theme 2: The EU CBAM: the trade partner perspective
 - a. What reactions have been seen from the EU's trade partners to the carbon border mechanism?
 - b. How are the objectives of the carbon border mechanism understood outside Europe?
 - c. What is the readiness of third country companies to adapt to the requirements of the EU CBAM?
 - d. How do you expect the EU's trade partners to take retaliatory measures, such as new tariffs, in response to the adoption of the the EU CBAM?
 - e. Is it possible that the EU CBAM could lead to a new trade war?
 - f. How likely do you think it is that some of the EU's trading partners will question the compatibility of the mechanism with WTO rules?
4. Theme 3: The EU's carbon border mechanism: potential consequences for Finland and Finland's foreign trade
 - a. What kind of reactions has the EU CBAM provoked in the Finnish business community?
 - b. How has the reporting period started?
 - c. What do you see as the strengths of the EU CBAM? What do you see as weaknesses?
 - d. Which Finnish sectors or companies will benefit most from the adoption of the EU CBAM? Which ones see the EU CBAM as posing more risks to their business?
 - e. How do you think the EU CBAM will affect the competitiveness of Finnish exporting companies?
 - f. What impact would a possible extension of the EU CBAM have on Finnish companies?
 - g. How will the EU CBAM affect Finland's trade in the EU internal market?
5. Is there anything you would like to add or comment on from earlier in the interview?

Appendix 2 Interview questions, original in Finnish

1. Millainen tausta sinulla on ja minkäläisten tehtävien parissa työskentelet nykyisin?
2. Teema 1. Euroopan unioni ja sen kauppapolitiikan rooli ilmastonmuutoksessa
 - a. Millainen merkitys Euroopan unionilla ja sen kaupalla on maailmalla? Millainen rooli Euroopan unionilla on ilmastonmuutoksen vastaisessa taistelussa globaalisti?
 - b. Millainen merkitys kauppapolitiikalla on Euroopan unionille? Miten kuvailisit Euroopan unionin kauppapolitiikan muuttuneen viime vuosina?
 - c. Millaisena muutoksena Euroopan unionin hiilirajamekanismia voidaan pitää Euroopan unionin kauppapolitiikalle?
3. Teema 2. Euroopan unionin hiilirajamekanismi: kauppakumppanit-näkökulma
 - a. Millaisia reaktioita Euroopan unionin kauppakumppaneilla on nähty hiilitullirajamekanismiin liittyen?
 - b. Miten hiilitullirajamekanismin tavoitteet ymmärretään Euroopan ulkopuolella?
 - c. Millaisia valmiuksia kolmansien maiden yrityksillä on sopeutua hiilirajamekanismin vaatimuksiin?
 - d. Miten arvioit, tulevatko Euroopan unionin kauppakumppanit nostamaan vastatoimia, kuten uusia tulleja, reaktiona hiilirajamekanismiin käyttöönottoon?
 - e. Voiko hiilirajamekanismi johtaa uuteen kauppasotaan?
 - f. Miten todennäköistä näet, että osa Euroopan unionin kauppakumppaneista tulee kyseenalaistamaan mekanismin yhteensopivuuden WTO:n sääntöihin?
4. Teema 3. Hiilirajamekanismin mahdolliset vaikutukset Suomeen ja Suomen ulkomaankauppaan
 - a. Millaisia reaktioita suomalaisissa elinkeinoelämässä hiilirajamekanismi on herättänyt?
 - b. Miten raportointikausi on lähtenyt käyntiin?
 - c. Mitkä asiat näet hiilirajamekanismit vahvuutena? Entä heikkoutena?
 - d. Mitkä suomalaiset alat tai yritykset tulevat hyötymään eniten hiilirajamekanismin käyttöönotosta? Entä mitkä vastaavasti näkevät hiilirajamekanismissa enemmän riskejä omalle liiketoiminnalleen?
 - e. Miten arvioit hiilirajamekanismin tulevan vaikuttamaan suomalaisten vientiyritysten kilpailukykyyn?
 - f. Millaisia vaikutuksia hiilirajamekanismin mahdollisella laajenemisella olisi suomalaisille yrityksille?
 - g. Miten hiilirajamekanismi tulee heijastumaan Suomeen ja sen käymään kauppaan EU:n sisämarkkinoilla?
5. Haluaisitko vielä lisätä jotakin tai kommentoida jotain aiempaa kohtaa haastattelusta?

Appendix 3 Information sheet on the research and data processing

TIEDOTE TUTKIMUKSESTA JA TIETOJENKÄSITTELYSTÄ

Tutkimuksen nimi

EU's carbon border adjustment mechanism addressing carbon leakage: Influence on Finnish foreign trade

Pyyntö osallistua tutkimukseen

Tutkimuksen tavoitteena on ymmärtää, millaisia muutoksia EU:n uusi hiilirajamekanismi tuo EU:n kauppapolitiikkaan ja miten se tulee vaikuttamaan Suomen ulkomaankauppaan ja kilpailukykyyn.

Tutkimuksessa haastatellaan kansainvälisen liiketoiminnan sekä suomalaisen elinkeinoelämän asiantuntijoita suomalaisista organisaatioista.

Osallistumisen vapaaehtoisuus

Tähän tutkimukseen osallistuminen on vapaaehtoista. Voitte kieltäytyä osallistumasta tutkimukseen tai peruuttaa suostumuksenne syytä ilmoittamatta, milloin tahansa tutkimuksen aikana ilman, että siitä aiheutuu teille minkäänlaisia kielteisiä seuraamuksia. Jos päätätte peruuttaa suostumuksenne, peruutukseen mennessä jo kerättyä aineistoa käytetään tutkimustarkoitukseen anonymisoituna ja luottamuksellisesti.

Tutkimuksen toteuttaja

Tämän tutkimuksen toteuttamisesta vastaa Turun yliopiston kauppakorkeakoulun kansainvälisen liiketoiminnan pääaineopiskelija Olga Laakso.

Tutkimuksen rekisterinpitäjä on Olga Laakso, joka vastaa tutkimuksen yhteydessä tapahtuvan henkilötietojen käsittelyn lainmukaisuudesta. Tieteellisessä tutkimuksessa henkilötietojen käsittely perustuu yliopistolaisissa annettuun tehtävään ja sillä toteutetaan yleistä etua.

Tutkimusmenetelmä

Haastatteluissa kerättyjä tietoja analysoidaan laadullisen sisältöanalyysin keinoin.

Haastattelujen kesto 45 min–60 min.

Haastattelun tavoitteena on kartoittaa asiantuntijan näkemyksiä EU:n hiilirajamekanismin vaikutuksista EU:n kauppapolitiikkaan ja Suomeen.

Haastateltavan luvalla tutkimushaastattelut tallennetaan sekä ääni- että tekstitiedostona.

Tietojen luottamuksellisuus ja tietosuoja

Haastatteluissa annettuja tietoja käsitellään huolellisesti ja eettisiä periaatteita noudattaen. Lähtökohtaisesti haastateltavat eivät ole anonymisoituja tutkimuksessa, mikä tukee tutkimuksen luotettavuutta ja läpinäkyvyyttä. Voitte halutessanne pyytää henkilöllisyytenne anonymisointia.

Kaikki haastateltavat saavat mahdollisuuden tarkistaa omat tietonsa ennen tutkimuksen julkaisua ja heille tarjotaan mahdollisuus kommentoida tai korjata annettuja tietoja.

Haastatteluissa kerättyjä tietoja käsitellään tietoturvallisesti tutkimuksen ajan. Tutkimuksen päätyttyä kerätyt tiedot hävitetään.

Tutkimuksen kustannukset ja rahoitus

Tutkimukseen osallistuminen on teille maksutonta. Tutkimuksesta ei makseta palkkiota, eikä tutkimukseen osallistumisesta aiheutuvia mahdollisia ansionmenetyksiä tai matkakustannuksia korvata.

Lisätietoja

Jos teillä on kysyttävää tutkimuksesta, voitte olla yhteydessä tutkijaan.

Yhteystiedot:

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