# CBAM at the Border: A climate tool or a trade barrier?

## The effects of the Carbon Border Adjustment Mechanism (CBAM) on a manufacturing company's supply chain

Linnéa Graflund

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Linnéa Graflund


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| **Supervisor:** | **Richard Ferguson, Swedish university of agricultural studies, department of economics** |
| **Examiner:** | Per-Anders Langendahl, Swedish university of agricultural studies, department of economics |



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**Swedish University of Agricultural Sciences**
Faculty of Natural Resources and Agricultural Science
Department of economics

## Abstract

This thesis seeks to investigate the potential effect the regulation of CBAM has on a manufacturing companies supply chain within the industry of construction equipment. Further, the aim is to explore whether the environmental regulation of CBAM hinders or drive competitiveness. A case study is conducted at Volvo Construction Equipment through several semi-structured interviews to better understand the effects the regulation has on a company's strategic and operational activities throughout the supply chain. In addition, the research offers a case example of a component used at the manufacturing site, to explore the financial and environmental effects of the regulation. The study takes a qualitative and grounded theory approach to better understand the ongoing behaviours and patterns connected to environmental regulations. The findings are analysed through the lens of sustainable supply chain management theory as well as transaction cost theory. The analysis shows that CBAM can to some extent hinder competitiveness among companies operating in the EU compared to global competitors. However, the effects of the regulation on a firm's competitiveness and innovation will mostly depend on the company's approach, whether it is proactive or reactive. With a proactive approach to the regulation of CBAM and integration of it in a decision-making tool for sourcing decisions, the legislation, together with internal pressures, can trigger innovation.



*Keywords: Carbon border adjustment mechanism, CBAM, Sustainable supply chain management, transaction cost theory, environmental regulations*

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# Abbreviations

| | |
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| LCA | Life cycle assessment |
| MDS | Material Data Sheet |
| SDE | Supplier Development Engineer |
| SSCM | Sustainable Supply Chain Management |
| TCT | Transaction Cost Theory |
| SAQ | Self-Assessment Questionnaire |
| QSCC | Quality Sustainability Capacity Cost |

# 1. Introduction

*The chapter begins with a description of the background to the ongoing climate changes which leads to the new environmental regulations implemented by the European Union. The empirical and theoretical problem then aims to clarify the limitations to existing research on the Carbon Border Adjustment Mechanism (CBAM). Lastly, the aim, research questions and delimitations are presented.*

Climate change is affecting the entire planet with melting ices and glaciers, drought, extreme weather and loss of biodiversity. The summer of 2023 showed the hottest recorded temperatures since measuring began (Nasa, n.d.). To fight climate change, the UN presented the Sustainable Development Goals (SDGs) in 2015. The SDGs is a mixture of goals to be reached by 2030 which covers environmental, economic and social sustainability (Globala målen, n.d.). The responsibility of reaching these goals lies on governments, institutions, companies and people. Companies' responsibility is to achieve economic growth with consideration of social and environmental sustainability (Globala målen, 2024).

As a strategy to tackle climate change, the EU has launched several initiatives to prevent the global temperatures from increasing. Shortly after a meeting in December 2019, the EU green deal was presented. The EU green deal aims to reduce the impacts on the atmosphere so that emissions can be reduced by 55% in 2030 and later reach a net-zero level in 2050. By net zero emissions, humanity makes sure that emissions of this type are either reduced or taken care of through carbon removals (Consilium, n.d.).

Fit for 55, a package of laws included in the EU green deal, includes several regulations such as the EU Emission Trading System (ETS) which is a tool to help regulate emissions in Europe (European commission, n.d.a.). This trading system exists so that there can be a limit to the number of emissions industries can release. To release a higher level of emissions, companies must buy allowances (ibid). The EU Emission Trading System applies to goods purchased within the EU. To prevent *carbon leakage*, when emissions increase in one country due to restrictions in another, the regulation of Carbon Border Adjustment Mechanism (CBAM) is now under implementation (European commission, n.d.b.). The adjustment mechanism applies to goods imported into the EU from countries outside the EU. CBAM is applicable on iron and steel, cement, fertilizers, aluminum, electricity and hydrogen. In 2023, the initiative was first launched and on January 1st, 2026, the transitional period came to an end and importers must continue to report and start to buy certificates for emissions connected to purchased goods (Naturvårdsverket, n.d.). To be able to do so, importers must first become approved declarants. This

initiative exists to prevent countries outside of the EU from gaining an advantage by not being regulated by the same restrictions.

Volvo Construction Equipment is a part of the globally operating Volvo group. Volvo CE has 16 manufacturing sites globally and around 15,000 employees (Volvo CE, n.d.). There are four manufacturing sites in Sweden and the basis for this research is the manufacturing site in Arvika, Värmland which manufactures wheel loaders. Volvo CE has actively worked with sustainability for many years and has several suppliers outside of the EU who will be affected by the legislation of CBAM, depending on the material that Volvo imports from them. It is therefore a suitable choice for a study concerning environmental regulations effect on Sustainable Supply Chain Management (SSCM). Since the regulation of CBAM will affect the departments working with suppliers and trade, the focus of the supply chain management will be mainly on the design and procurement process of the supply chain. However, to highlight the complexity of operating in global supply chains with many stakeholders and uncertainty, the whole perspective of the supply chain approach will be explored to understand what effect the decision about procurement has throughout the supply chain. By exploring these effects by engaging in employee experiences at Volvo CE the research can contribute to a better understanding of how to prepare for new environmental regulations, what effects they have on supply chains and whether they act as a driver or barrier to sustainability.

## 1.1 Problem formulation

In this section the empirical and theoretical problem is presented.

### 1.1.1 Empirical problem

The status as an approved CBAM declarant is needed to import goods into the EU as of January 1st, 2026. From March 31st, 2025, importers can start to apply to become approved declarants (Naturvårdsverket, 2025). Companies such as Volvo CE, manufacturing machines involving electricity, steel, iron, cement etc., will be affected by this regulation. Either by not being approved CBAM-declarants in time or by having to import CBAM regulated goods outside of the EU for their machines. The new regulations call for action and according to Jakobsson (2024) the information to companies about the new directive has been poor. Strategic decisions need to be made for companies that import goods, either by accepting the fees or through a change in purchase strategy or production design (Jakobsson, 2024). According to Widegren (2024) only 15% of the companies required to report the

emissions on imported goods did so in 2024. This indicates that there is still a long way to go before all required companies report according to the regulations.

A problem for companies is that EUs initiatives to reach sustainable development have led to 13,000 new regulations in the last five years (Allhorn, 2025). These regulations include CSRD, CSDDD, a shift in EU ETS to CBAM. These sets of rules make it more challenging for companies to navigate and there is a risk that these laws will weaken the competitiveness of businesses operating in the EU. Companies with manufacturing sites within the boarders will face a higher degree of competitiveness since the prices on purchased materials will increase, leaving companies outside of the EU to stand a better chance on the market (Orgalim, 2025). Corporate Sustainability Reporting Directive (CSRD) will be fully implemented in 2026 and at the same time, companies will be obligated to buy certificates for imported materials from outside the EU, according to CBAM (ibid.). While some argue that these regulations will not have a big impact on the competitiveness of companies in the EU (ibid.), others argue that the rules are too many and that the restriction for European companies needs to decrease and that a further focus on free trade is required (Allhorn, 2024). CBAM requires companies with imported goods from outside of the EU to reflect upon their procurement strategy since a purchase of these certificates will be required from January 1st, 2026. Three main strategies to tackle these new regulations can be identified. Companies can continue to import the existing material used in their products and pay for certificates for the goods imported from outside of the EU, companies can change their strategy and try to source the material inside the EU, or they can make a change in their product design so that construction does not require material regulated by CBAM. By taking part of a company's reactions and experiences regarding the new regulation of CBAM, the ambition is to map out the effects environmental regulations could have on a manufacturing companies supply chain and their sustainability strategy. The ambition is to gain further understanding on a strategic level by exploring the perspectives of employees affected by the legislation, as well as on a more operational level by examining the effects the regulation has on a specific product.

### 1.1.2 Theoretical problem

Environmental regulations impact on businesses performance has been studied for decades. Porter (1991) suggested that environmental regulations work as an incentive for firms to innovate and find new ways to run their operations more efficiently. By motivating firms to come up with new technologies not to carry the costs that these legislations would give the companies, countries with stricter environmental policies would give birth to enhanced competitiveness. Rexhaüser & Rammer (2014) rejects this to some extent by distinguishing between regulatory

driven environmental policies and voluntary ones. Their findings conclude that regulatory driven environmental policies have a bigger impact on companies' performance and that the effect the legislation has on a company depends on the specific environmental policy. Since then, the EU has come up with several environmental regulations to put external pressure on companies to act in a more sustainable manner (Allhorn, 2025). The new regulations are so extensive that the effect they have on companies in the EU might decrease their competitiveness compared to countries outside of the EU (ibid.). CBAM puts pressure on companies with suppliers outside of the EU to collect information about their emissions connected to production since this is required according to the legislation (Europe commission, n.d.a). The effects and reactions the new environmental regulation will have on companies operating within the EU is still to some extent unknown since the regulation of mandatory purchases of CBAM-certificates will start to apply January 1st, 2026 (ibid.).

They way companies will react to environmental regulations can to some extent depend on whether they are reacting on legislations in the way that they strategically want to minimize the costs or if they work proactively to create value. Compliance driven organizations act in a reactive way because they are forced to, while self-driven organizations work from an internal strategy in a proactive manner (Prasad et al., 2020). The debate on whether environmental regulations hinder or drive competitiveness remains and with the new edition of EU regulations from the last years (Allhorn, 2025) the lack of theoretical knowledge in the area is more prominent since the reactions to the legislation of CBAM has only been researched to some extent (Coster et al., 2024). The literature on CBAM and the effects on international trade and policies for the climate is growing, but there is a limitation to the exploration of the regulations impact on procurement strategies and the operational processes that comes with it (Dechezleprêtre et al., 2025). The scope of most of the studies so far has been on a macro level, giving indications of the regulation's effects on competitiveness on the global market or carbon leakage (Coster et al., 2025). The research gap identified is therefore the micro-level perspective, whether companies act in a reactive or proactive manner and what effects the regulation of CBAM will have on procurement strategy and supplier relationships. Moreover, due to the implementation of CBAM on January 1st, 2026, there is a lack of empirical evidence to determine whether the regulation drive or hinder competitiveness. With the ambition to try to understand manufacturing companies' reactions to this legislation, the aim is to fill the existing research gap and understand the relationship between environmental regulation and procurement strategy.

## 1.2 Aim and research questions

The aim of this study is to explore the effects the environmental regulation of Carbon Border Adjustment Mechanism (CBAM) has on a global manufacturing company's supply chain, what reaction it causes within the organization and the effects it might have on procurement strategy.

- What effects does the environmental regulation of CBAM have on a manufacturing company's supply chain and procurement strategy?
- Does CBAM drive or hinder competitiveness and innovation?

## 1.3 Delimitations

The aim of this study is to explore environmental regulations, and more specifically Carbon Border Adjustment Mechanism (CBAM)s effect on global supply chains with a support in theories of Sustainable Supply Chain Management, Institutional theory and Transaction Cost Theory (TCT). The choice to conduct the study at Volvo CE will create the limitation of only examining the effects of CBAM in one specific industry, the construction equipment industry. The research will explore the effects, to some extent, throughout the supply chain but the focus will lie on the development and procurement section of supply chain activities. The case example investigates the regulations effect on one specific part for assembly of the wheel loader produced at Volvo CE, which indicates that the regulation can have different effects on different products.

# 2. Theoretical framework

*This chapter presents the theoretical framework that makes the foundation for this study. Drivers and barriers to reach sustainable supply chain management (SSCM) are merged with Transaction Cost Theory (TCT) which together creates the theoretical framework to assist the research in understand environmental regulations effects on sustainable supply chain management.*

## 2.1 Sustainable supply chain management (SSCM)

A supply chain can be explained as a flow of activities to produce a product or a service. It derives from the extraction of raw materials and ends with the delivery of a finished product. A sustainable supply chain means that the activities throughout the chain are carried out with consideration of environmental, social and economic sustainability (Seuring & Müller, 2008).

A supply chain includes procurement, manufacturing and distribution of materials, supply chain management (SCM) is therefore about managing the relationships between these activities and improving them (Seuring & Müller, 2008). Sustainable development is "the development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland, 1987). By integrating sustainable development into supply chain management by managing every relationship throughout the supply chain with consideration of environmental, social and economic sustainability, Sustainable supply chain management (SSCM) can be achieved. Sajjad et al. (2015) identifies two main reasons why companies choose to engage in sustainability strategy and sustainability activities in the management of the supply chain. Firstly, the increase of efficiency, the reduction of cost and the reputational improvement can enhance the competitiveness of the company on the market. This engagement stretches outside of the company's barriers to the engagement with other stakeholders, such as suppliers. Secondly, to maintain its competitive advantage, firms must engage in societal, economic and environmental needs of all stakeholders in society, to maintain its legitimacy.

## 2.2 Drivers for SSCM

According to Prasad et al. (2020) there are two types of drivers, compliance driven (reactive) or self-driven (pro-active or voluntary). Compliance driven organizations operate in a reactive way and act because they are forced to do so in a way. DiMaggio & Powells (1983) theory about 'new institutionalism' addresses how

organisations act upon regulative, normative and cognitive pressures. The three key processes are: coercive isomorphism, mimetic pressures & normative pressures (ibid.).

### 2.2.1 External drivers

*Coercive isomorphism* is the process where institutions force legislation and new regulations on organizations. One example of this in Europe would be the Corporate Sustainability Reporting Directive (CSRD), CBAM or the EU Deforestation Regulation (EUDR). These legislations are implemented to make sure that organizations act in a more sustainable manner. Coercive isomorphism does not have to be laws, it can also be environmental standards, such as the ISO14001 or voluntary driven measures such as code of conducts conducted by organizations (Matten & Moon, 2008). Important for research connected to environmental regulations and innovation, competitiveness and sustainable development is the Porter Hypothesis. This hypothesis states that there is a correlation between well defined, well-structured environmental regulations and results in innovation and competitiveness. Porter (1991) claimed that environmental protection and economic competitiveness could be achieved simultaneously.

*Mimetic processes* is where companies tend to mimic other companies in the same field or where managers go for a "best practice approach" which could be to join a business coalition or educating their personnel in the latest expertise in sustainability (Matten & Moon, 2008). These types of processes tend to arise from a place of uncertainty, meaning that when a company lacks knowledge in an area, a mimetic process can occur (DiMaggio & Powell, 1983). By copying others or trying to copy others, success may be achieved (ibid). One example of mimetic processes is the Japanese business models such as *just in time* or *Kaizen*, models that have been copied and implemented in the western businesses.

*Normative pressure* is based on norms and values in society. If an organization is pressured by widely accepted practices or normative rules in society, it is a result of normative pressure (Matten & Moon, 2008). The educational sector contributes to normative pressure on organizations by choosing what to include in their curriculum and thereby presenting certain standards as the level to achieve legitimacy. Normative pressure could also stem from consumers, NGOs, industry standards or media which combined creates what is seen as socially acceptable. Normative pressure can occur when a company changes its business strategy due to a shift in an increased consumer demand for a higher recycling rate in products, for example.

The three different kinds of new institutionalism give an explanation to the different types of external drivers that exist and that, in turn, affect organizations to act in a more sustainable manner.

### 2.2.2 Internal drivers

Internal drivers are what makes one company's work with sustainability differ from another, despite that they may be facing the same external pressures (Prasad et al., 2020). Top management commitment to sustainability is described as a key factor for a company to obtain sustainable development. By aligning the company's structure, organization and strategy to the sustainable development goals, the organization can enhance that sustainability is a part of day-to-day decision making, both strategically and operationally (Epstein & Buhovac, 2014). Through top management commitment, leaders on a higher level can help set the standard of how the company chooses to frame their work with sustainability and thereby motivate this behavior throughout the supply chain. Prasad et al. (2020) found in their research that the organization's internal environment is a driving factor to achieving a sustainable supply chain, meaning that a top-down approach could enhance the work within this field, given that it's implemented in the correct way and further developed by employees.

Organizational culture is depicted as important for corporate sustainability since it can influence the decision-among employees. By making sustainability a part of the company's culture, a long-term approach is enhanced throughout the strategic and operational work of a company (Epstein & Buhovac, 2014). By having a proactive and innovative approach, a company is more likely to succeed with their sustainability work (Prasad et al., 2020). Epstein & Buhovac (2014) states that formal systems, such as KPI's and governance, aren't sufficient alone but need the support of organizational culture to drive sustainability. This is strengthened by the findings Sajjad et al. (2015) which implies that the value-based organization, that puts their values first rather than cost alone, also drives sustainability.

Strategic alignment is about making sure that the strategy itself and the strategic activities align. For sustainability, it means embedding it into the company's mission and vision, integrating it into the decision-making process and making sure that the structures, such as reporting of sustainability measures and ways of working aligns with the overall strategy (Epstein & Buhovac, 2014).

Epstein & Buhovac (2014) also identifies resource allocation as a key factor to achieve sustainability within an organization. Efficient resource allocation is about using resources in a responsible way as well as avoiding waste and overuse of resources. Sembiring (2020) also identifies sustainable waste management as an important factor SSCM. Sustainable resource allocation includes activities like

sustainable sourcing, training for employees and reviewing of distribution and costs. Companies with a higher degree of innovation are more likely to develop new ideas and thereby find a more efficient use of resources for sustainability (Ingenbleek & Krampe, 2023).

Performance measurements are identified as an important tool to achieve corporate sustainability and thereby a sustainable supply chain. By measuring the performances of suppliers and within the organization, the company can compare results to previous achievements to follow their development and make sure that they're working in the right direction. The measurement systems should provide measurements for all areas of sustainability; environmental, social and financial (Epstein & Buhovac, 2014). Kumar et al. (2023) identified several methods used for performance measurement in previous research such as social LCA, social audits, social reporting for social sustainability, LCA, environmental benchmarking, environmental reporting for environmental sustainability and cost-benefit analysis, input-output analysis and risk analysis for economic sustainability. By creating indicators that are measurable, the deployment of sustainability is made possible.

## 2.3 Barriers to SSCM

Besides drivers for SSCM, there are also hinders that makes SSCM more challenging for companies to achieve. below are the external and internal barriers to SSCM, identified in previous research. Barriers are what becomes obstacles when companies want to achieve SSCM.

### 2.3.1 External barriers

Suppliers' reluctance to engage in sustainability can prevent the development of sustainability at a company, it is therefore important to make sure that the supplier's work reflects the values of the importing company (Walker & Preuss, 2008). If the supplier is unwilling to share information or work according to a company's policy, a barrier may arise to reaching SSCM (Hall, 2006). Oelze (2017) identifies lack of government support as a barrier to SSCM, meaning that a lack of incentives and best practices can in fact hinder sustainable development. At the same time, regulations can be a barrier to innovation and sustainable supply chain management. The cause of environmental regulations is usually to prevent companies from harming the environment and their surroundings (ibid.).

### 2.3.2 Internal barriers

Ageron et al. (2011) identifies lack of monetary means as an internal barrier to SSCM since developing a supply chain in a sustainable manner may require new

investments which leads to higher costs. Often projects for SSCM requires a high investment at the beginning to reach long-term sustainability, which could be a challenge for companies (Hervani et al., 2005). This is connected to the short-term perspective of procurement strategies where the lowest cost is the option that gets chosen, which often means that the product holds a lower standard in environmental measurement (Walker & Brammer, 2009).

The findings of Ageron et al. (2011) research shows that internal barriers are sometimes connected to lack of awareness about sustainability, this is strengthened by Zhu & Sarkis (2006). Behavior change is needed to make such a big difference in strategy and culture which can be difficult to obtain within a company that has existed on the market for a long time. If the employees lack motivation to make the change for sustainable development it will be a barrier towards reaching SSCM (Carter & Rogers, 2004). The organizational culture consists of people's values, behaviors and beliefs (McSweeney, 2002) and the company will most likely represent the values of the society and country it operates in. The view of sustainability differs around the globe, meaning that companies operating in different countries have different conditions (Zhu & Sarkis, 2006). Since internal drivers are voluntary, internal barriers will also depend on the unique context of the company and the surrounding it is operating in.

Training and education are another factor identified as a barrier to implement SSCM. Without knowledge about social and environmental ways of operating, it will be a challenge for operations to achieve SSCM. Majumdar & Sanjib (2018) acknowledged that spreading the knowledge about how to work with sustainability can lead to success in incorporating sustainability within green supply chain management. By educating both personal and suppliers in the value chain, the chances are higher that a company will succeed Luthra (2011).

To evaluate sustainable performances, there must be a way of measuring them. Without proper metrics to evaluate, it becomes impossible to measure the actual improvements (Centikaya et al., 2011). Earlier on, performance measures for the supply chain had more focus on quality, time and cost. This could be through delivery performance and order lead-times for example Gunasekaran et al. (2004). Caplice and Sheffi (1995) saw the challenge of choosing what measures to use when measuring supply chain performance, managers could choose this by constantly evaluating and reflecting over the activities in the supply chain. Eight criteria's for choosing factors to measure where identified in their research: validity, robustness, usefulness, integration, compatibility, economy, level of delta and behavioral soundness. Environmental management systems exist such as different ISO

standards to help with the evaluation of supply chain management (Shaw et al., 2010). To evolve and reach continuous improvements and sustainable supply chain performance, performance measures are required which means it's a barrier for companies who do not have them implemented (ibid.).

## 2.4 Practices for SSCM

The activities to reach sustainability within a supply chain are many, from extraction of raw material to delivery to end customer. Shekarian et al. (2020) found 11 main categories, contribution to SSCM. These are: *Manufacturing*, *design*, *logistics*, *supply planning & procurement*, *management information systems*, *quality performance*, *safety & security*, *ethics & social responsibility*, *financial management*, *structural management* and *promotional programs*. The categories with relevance for this research are further explored below.

Design is both the design of products as well as the outline of the supply chain. By including sustainability into the design phase, companies can minimize resource use, innovations for safety and consumer health risks can be assessed, avoid harmful materials and include new technology to lower the energy usage. Supply Chain (SC) design is the outline of the SC to best align with the sustainability strategy. Examples are keeping a short geographical distance to suppliers to lower the Co2 emissions related to transportation and having an adaptable supply chain approach to best meet the needs of customers and suppliers (Vargas et al., 2018). Design for environment (DFE) is a concept where the consideration of environment, health and safety is integrated into the design of products (Hossain & Iqbal, 2012). This can be achieved by optimization of the lifetime of products, reduction of materials used in production, reduction of the environmental impact in the user stage, optimized distribution systems from and to the manufacturing facilities as well as the optimization of end-of-life systems (Bevilacqua et al., 2012). By assigning life-cycle assessments techniques in the design phase, design engineers can choose components that are best suited for a product, in consideration of environmental and social aspects of sustainability. By integrating tools that can calculate environmental impacts, the options of different design alternatives can be evaluated (ibid).

Supply chain planning and procurement includes resource management, which is the optimization of resource usage in the design and manufacturing process (Shekarian et al., 2022). Procurement is the process of expanding the work with sustainability outside the company's own operations. By integrating sustainability in the procurement processes, social, environmental and economic aspects are considered (Meehan & Bryde, 2011). Challenges in achieving sustainable procurement include lack of transparency in supply chains, meaning that the

information about extraction of materials and production processes can be difficult to gather. Another difficulty is balancing the cost and environmental aspects as these may not always align (Ruparathna, 2015). If the implementation of sustainable procurement is achieved, it can lead to improved health for workers, reduced environmental impact and potential cost savings (ibid.). Supplier management is the activity of nurturing the relationship to suppliers and engaging in a long-term relationship. This can be achieved by shared knowledge and technology to help the relationships between the two parties (Shekarian et al., 2022).

Promotional programs are important to achieve a sustainable supply chain. By engaging in education and training for employees, awareness and a sense of direction is established among the employees (Shekarian et al., 2022). To best integrate sustainability into everyday decisions, both employees and managers should undergo training in sustainability (Jia et al., 2015). By educating personnel, a foundation of knowledge of the topic can be achieved and makes the operational processes align with the sustainable strategy in a better way. Promotional programs are also about having supportive plans and programs for sustainability in place. Education should also be expanded to suppliers. By engaging suppliers in sustainability, companies can help suppliers meet the sustainability standards of the company and foster a collaborative approach for sustainability (Vargas et al., 2018).

The activities throughout the supply chain shows the complexity and many actors involved in achieving and obtaining SSCM, especially in the environment of global multi-tier supply chains. Najjar & Yasin (2021) found that although institutional controls could help regulate lower-tier suppliers, internal activities for sustainability are still beneficial to achieve SSCM. SSCM is colored by uncertainty. According to (Coenen et al., 2018) deep uncertainty connected to supply chain management concerns unpredictable external factors such as a change in consumer demand, regulatory changes or technical innovations. They also address dynamic complexity within their research. Dynamic complexity refers to interrelationships within a system where the cause and effect are not always aligned (ibid.). The challenges of balancing the coordination of multiple stakeholders and the fluctuating demand makes the environment complex for companies to navigate. Traditional forecasting methods for these potential scenarios are not sufficient to meet the changing demand and geopolitical climate, the authors therefore call for a development of a decision-making tool that is resilient towards these external changes and that can be adaptable to different, unique situations.

## 2.5 Transaction cost theory

Transaction cost theory (TCT) has its ground in new institutional economics. New institutional economics is a reaction to the older neoclassical economics where the main belief is somewhat of a simplification of the real world (Hobbs, 1996). Neoclassical economics believes in a perfect market with competitiveness, there is one homogenous product and all information about it, the quality and price are known to everyone. There is no focus on how transactions occur or are carried out but instead the focus lies on the transaction of the exchange of goods (Furubotn & Richter, 2005). As a reaction to this approach, new institutional economics arises as Ronald Coase discovered some limitations to neoclassical economics. He found that there are additional costs to businesses rather than the cost of purchased goods alone. These additional transaction costs include costs of carrying out contracts, negotiating, choosing suppliers etc. These costs can be divided into *information cost, negotiation cost* and *monitoring cost* (Coase, 1937).

*Information cost* is the cost of searching for information about products, suppliers, emissions released by a supplier, pricing (Hobbs, 1996). This has the connection to the implementation of new regulations affecting the supply chain since new information needs to be gathered about the Co2 emissions of the production at a supplier, the costs of designing a new product that's acceptable according to the regulation or the change of supplier. *Negotiating costs* are the cost that arises during the agreement of a contract between two parties (ibid). This could be for example a negotiation of a price of a product due to higher cost of producing it, according to the taxes of a new environmental regulation. *The monitoring cost* is the cost of making sure that the agreement is fulfilled by both parties (ibid.). This is relevant in this study through for example the following up on the emissions released by a supplier, ensuring that the data they provide is the actual emissions released. Costs like these are the price to exist on the market and the only way to get rid of these are to vertically integrate, which is when a company in-sources a product/service, for example producing a product themselves instead of out-sourcing production (Furubotn & Richter, 2005).

Four key concepts are part of forming the term transaction costs, these are opportunism, asset specificity, bounded rationality and informational asymmetry. The concepts relevant for this research are further described below.

*Opportunism* is when an actor part of a transaction cost takes advantage of the situation in a way that will benefit them (Furubotn & Richter, 2005). An example would be in a situation where there is a limited number of suppliers available for a production site which gives them an advantage in having the opportunity to increase

the prices because of the rare product. If the supplier takes this opportunity, it's called opportunism (ibid).

*Bounded rationality* is the limitation to human decision making (Hobbs, 1996). Even if a company, consumer or supplier tries to gather all the information required to make an informed decision, it may not be possible to access all information about a specific product for example. The problem with bounded rationality is more likely to occur the more complex the environment is that the decision needs to be made in (ibid). The importance of bounded rationality in connection to TCT is that the theory assumes that all agents will act in a rational manner but might have difficulty doing so due to the limitation of accessing information and predicting all potential outcomes. Williamson (1996) argued that contracts are unable to manage bounded rationality and opportunism alone and therefore highlighted the importance of institutions and governance structures to support companies with their management of transaction costs.

*Informational asymmetry* is when the level of information is not equal to both parties in a transaction. This could lead to one of the parties acting opportunistically by hiding information to the counterpart to gain an advantage (Hobbs, 1996). *Ex ante opportunism,* known as *adverse selection,* is when information is hidden prior to a transaction. Akerlof (1970) made a famous contribution to this theory by his example of "lemons". This theory is about a car dealership that has more information about whether a car is new or second-hand ("lemon"), but the consumer does not. When the consumer does not have the information about potential defects, the car dealership can act opportunistically and hide this information to get a better price (ibid.). *Ex post opportunism,* known as moral hazard, on the other hand is when the information is hidden after the transaction has been made. One example would be how consumers act after they have bought insurance. By having insurance, the consumer may be more carefree and less preventive in his or her actions of protecting their house from a fair (Hobbs, 1996). People could also lie to the insurance company and state that they have crashed with an animal with their car when in fact they were only being reckless in traffic. Since the insurance company won't have the actual information about the case, informational asymmetry occurs (ibid.).

Coase (1937) stated that a company will carry out its own activities if it is less costly and more efficient than the option to outsource the activity. Williamson (1996) developed this concept by stating that whether a company chooses to vertically integrate or not depends on the asset specificity, the degree of uncertainty and whether it's frequent transactions or not. Vertical integration means that a company chooses to change their outsourcing strategy to insourcing an activity, for example to produce a component at the manufacturing site rather than contracting a supplier

to do it. The strategy to vertically integrate is often costly and risky which implies that a company should only choose to do so under careful consideration.

Transaction cost has a close connection to Supply chain management and has also been proven to have an impact for establishing a sustainable supply chain through Sustainable supply chain management (SSCM). The integration of transaction cost theory with SSCM expands the transaction cost approach from solely economic to social and environmental (Touli, 2024). In line with Williamson's (1996) idea about how institutions and governance structures are required to support the function of transaction cost, Porter & Linde (1995) argued that well defined environmental regulations can breed an organization's innovative capabilities as well as their competitiveness. This is partly because a clearly formulated regulation can remove uncertainty from the market and simplify interactions. A proactive approach to these types of regulations could lower the transaction cost and improve the efficiency and sustainability of a supply chain (Shrivastava, 1995). Transaction cost theory could be used as a decision-making tool related to the strategic decision within SSCM. This is done through the decision between outsourcing/insourcing (Williamson 1985), the change of a supplier (Spekman et al., 1998) or a change in design of a manufactured product. The table below depicts the different phenomena of transaction cost theory and how they relate to examples from SSCM.

*Table 1. The transaction cost dimensions and their relation to SSCM practices.*

| **Transaction cost dimension** | **SSCM example** |
|---|---|
| Search & information costs | Collecting data about emissions from tier 1,2,3 manufacturing |
| Negotiation costs | Negotiation and contract making of new costs connected to the price add-on driven by a new environmental regulation |
| Monitoring costs | Audit suppliers environmental and social sustainability performance |
| Opportunism | Suppliers exaggerating emission reductions |
| Asset specificity | New technology to produce low-emission products |
| Bounded rationality | The difficulty of following up tier 3,4,5 work with social and environmental sustainability |
| Informational asymmetry | Suppliers withholding information about their Co2 emissions |

| | |
|---|---|
| Uncertainty | difficulty in adapting to new environmental regulations |

## 2.6 Theoretical synthesis

While institutional theory, and thereby external and internal drivers, explain why a company could be influenced or motivated to act sustainably, the corporate sustainability model of Epstein & Buhovac (2014) provides a strategic pathway for the implementation of sustainable practices. TCT is used in this research to analyze the friction points that are constantly evolving behind the insecurities and uncertainties. The negotiation challenges, the uncertainties of environmental regulations and geopolitical climate, the information seeking and the building of relationships with suppliers. The corporate sustainability model, institutional theory and TCT all show the complexity of managing a sustainable supply chain and aims to clarify what actions can be taken to achieve a sustainable and financial performance through sustainable supply chain activities.

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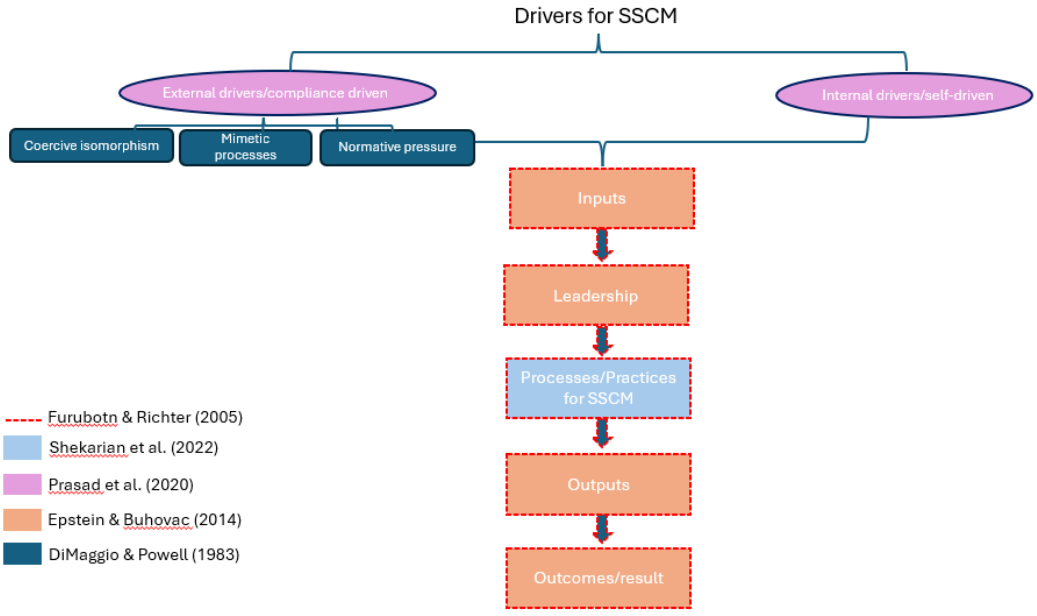


*Figure 1. Theoretical synthesis of SSCM and TCT.*

# 3. Methodology

*In this chapter the philosophical approach that makes out the foundation for the methodology and choice of methods are presented. The carrying out of the research is described including the selection process, the collection of data and analysis of empirical findings. Lastly, the chapter explores the quality of research, ethical considerations and ends with a critical reflection about the research and its limitations.*

## 3.1 Approach

The thesis takes an inductive approach which means that generalizations and possible conclusions will be drawn by first gathering empirical findings and then composing a theoretical framework from it. This is the opposite to deductive reasoning where a hypothesis built on existing theory is tested through examination of the real world (Bell et al., 2019). Even though inductive reasoning has been criticized for, in most cases, not being able to provide new theory but rather generalizations about phenomena (Bell et al., 2019 p. 23) it was chosen since it allows the researcher to take a stance from the empirical findings first without the limitation of existing theory. The inductive approach called for recurrent consideration of the aim and purpose of the thesis since this may change throughout the process.

The reason for the chosen grounded theory approach is that it allows the data to "speak for itself", this means that the collected data is at the center of the research rather than existing theories. According to Bell et al. (2019) grounded theory is widely known to use when a researcher wants to analyze qualitative data. The benefit of this approach is that it allows the researcher to form concepts, categories from the data collected without consideration of previous theories. There is most often an iterative approach connected to grounded theory which is when research is based on continuous cycles, meaning data is retrieved and analyzed before going back in and retrieving data again and then analyzing the new data. An approach like this indicates that there could be a change of direction of the research throughout the process (Bell et al., 2019 p.522). That was also the case with the research of this thesis since the research questions and aims were revised and changed throughout the process. An iterative approach may be challenging in a situation where the thesis assignment is given from the focal company and the focal company requires a certain outcome. In this case, the case in point delivered a relatively high degree of freedom since the author is an employee at the company and was therefore trusted to some extent form the research solely. The grounded theory approach together with an iterative approach calls for substantial effort of time when collecting,

transcribing, analyzing data and revising the potential study outcome. This was at points challenging since the time constraint for this thesis is a single semester.

Critique towards grounded theory includes time consuming transcribing of interviews, which was a challenge in this research because of the many, lengthy interviews. Bell et al. (2019) also states that there is an uncertainty in the interpretation of the collected data which could lead to a lack of reliability and replicability since different researchers could reach different conclusions (ibid.).

## 3.2 Research design

This thesis takes an exploratory approach and was conducted through a qualitative single case study. According to Bell et al. (2019) a qualitative approach has a connection to *naturalism* which is when the study aims to describe people and their interactions without interfering. The benefits of this type of research design are that a case study allows the researcher to study real life phenomena by gaining real-life examples. This study will use open-ended interview questions to gain a better understanding of a company's reactions to regulatory changes and their work with sustainable supply chain management and therefore the qualitative approach is found to be most suitable. Existing critique towards qualitative research such as it being too subjective and that the results depend too much on researcher's view of what is important (ibid.) will be avoided by putting the respondents' opinions and thoughts in the center rather than the researchers.

For this specific case, the single case study approach is beneficial since the research aims to answer the questions of how a company works with their sustainability strategy and what their reactions are when a new regulation is put into place. By interviewing people who work with this daily, both operative and strategic knowledge is gained in the chosen field.

## 3.3 Literature review

The literature review strengthens the results of the research since the empirical findings are compared with the existing literature to understand if answers from real-life scenarios match what has been studied before or not (Bell et al., 2019). Based on the collected data, theories with a connection to the data were chosen to help understand and categorize the empirical findings. The literature was found through searches in google scholar and science direct. To find the most relevant literature, keywords like: *Supply chain, supply chain compliance, Carbon Border Adjustment Mechanism, CBAM, supply chain management, sustainable supply chain management, transaction costs, transaction cost theory* where used. A

selection was then made based on relevance, date of publication, connection to the topic of this thesis, citations and peer reviewed.

## 3.4 Selection process – case company & respondents

The chosen case company gave the author insights to the challenges and complexity of navigating sustainability in global supply chains. Through discussions with managers at the company, the idea arose to explore the topic of environmental regulations effects of procurement processes further. The company is a suitable choice for a case study aiming to examine how environmental regulations affect companies since they operate globally with thousands of suppliers, meaning that they will get effected by the regulation of CBAM. The author can benefit from the employment at the case company since this position offers valuable insights that can sometimes be hard to reach otherwise. With an already established network within the organization, the research can provide a rich amount of empirical data since more time was set aside for interviews rather than gathering respondents. None of the asked respondents turned down the question about participating in the study, which could also be a benefit of the researchers' employment at the company.

A purposive sampling method alongside a snowball sampling was used to decide on the suitable respondents. People with knowledge in different steps of the supply chain, sustainability and trade management were interviewed to gain knowledge within the chosen field of study. The research involves 10 respondents with the purpose to gain a richer and more in-depth experience about the different steps of the supply chain and their work with sustainability strategy and effects of new regulations. The commodity buyers and Supplier development engineers were selected as respondents since they are the owners of the relationship to the supplier, this means that their experiences can give knowledge about supplier relationships at Volvo. The CSR auditor and sustainability project leader were chosen as respondents due to their expertise in sustainability. The head of purchasing was selected to give an insight into the long-term strategies at Volvo CE, as well as the work with sustainability. The head of trade management and head of industrial planning were recommended to the author by other employees at Volvo, who stated that these persons would have good knowledge about the ways of working with CBAM at Volvo. As for the product owner, the person was interviewed due to the insights the person has on consumer demands. Bell et al. (2019) also states that several respondents can increase the validity and reliability since participants could confirm each other's standpoints which would strengthen the findings. It is also a way to offer several perspectives rather than the ones from fewer respondents within the same field of operation. The reason for the choice to not interview more people The chosen 10 respondents aim to help the author achieve richness in the

research by giving an in-depth analysis on the case. The table below shows the respondents positions at the case company, the date of interview, whether the interview was held in person or via Teams and the length of the interview.

*Table 2. List of the respondents, in order of appearance.*

| **Position at Volvo** | **Date of interview** | **Format** | **Time** |
|---|---|---|---|
| Supplier development engineer (SDE 1) | February 18th 2025 | in person | 46 min |
| Commodity buyer 1 | February 18th 2025 | in person | 36 min |
| Commodity buyer 2 | February 19th 2025 | Teams meeting | 53 min |
| Purchasing sustainability project leader | February 24th 2025 | Teams meeting | 43 min |
| CSR auditor | February 27th 2025 | Teams meeting | 59 min |
| Supplier development engineer (SDE 2) | March 6th 2025 | in person | 29 min |
| Senior product owner | April 2nd 2025 | Teams meeting | 46 min |
| Head of purchasing | April 3rd 2025 | Teams meeting | 45 min |
| Head of industrial planning | April 4th 2025 | Teams meeting | 40 min |
| Head of trade management | April 14th 2025 | Teams meeting | 51 min |
| LCA specialist | February 24th 2025 | Teams meeting | 30 min |

## 3.5 Data collection and analysis

The collected data in this research came from interviews with the ten chosen respondents. The respondents were contacted via Teams that the company uses as a communication channel and asked about interviews. If they replied that they

would be able to participate in an interview, the interview was scheduled via Teams or in real life at one of Volvos production sites. The respondents did not get any questions beforehand; this was a conscious choice to get answers that were as true to the reality as possible. The interviews were semi-structured, meaning that the questions were partially adopted to the specific respondent and their field of operation. The range of the interviews differed from 30 minutes to one hour and the language the interviews were conducted in was either Swedish or English, depending on the mother tongue of the respondent. To ensure that the researcher stayed focused during the interviews and were able to ask follow-up questions, the interviews were recorded and later transcribed for analysis. All respondents were offered to read the empirical findings afterwards, to make sure that what they had answered was depicted in a truthful way.

A thematic analysis was conducted to analyze the data collected. First, the transcript was read through one time each. After this, several codes were identified based on the gathered information. The thematic codes was “Sustainability work with suppliers”, “Criteria’s for new suppliers/new material”, “Challenges with environmental regulations/sustainability”, “transaction costs”, “KPI’s”, “Strategy for integration of sustainability/CBAM”, “Effects of environmental regulations”, “CBAM and supply chains”, “Opportunities connected to CBAM”, “Role descriptions/cross functional work”, “training/education in sustainability”, “Challenges with supply chains”, “Changes in sustainability work”, “External inputs”, “Counter weight”. To answer the research questions and aim of this study, these thematic codes were chosen. Each code was given a color and color markers were then used to highlight the different themes of the interviewee’s answers. This enabled the comparison of answers and the compilation of the empirical findings.

Bell et al. (2019) Describes coding and the thematic analysis to be an essential part of the grounded theory approach. This is because coding allows a systematic approach to the gathered data and enables a deeper analysis. The thematic approach allows the researcher to find themes and connect them both to different respondents' answers as well as to the theoretical framework. By identifying themes and analyzing these further, the richness of the research becomes enhanced (ibid).

## 3.6 Quality of research

Achieving trustworthiness is an important process in research. In qualitative research, there are four ways to ensure this which is true: Credibility, transferability, dependability and confirmability (Bell et al., 2019).

Credibility is achieved when the data collected from the respondents can be validated as trustworthy and a true representation of the respondents replies (Bell et al., 2019). The author needs to take some precautions to achieve this. Data triangulation was used to ensure credibility which is when multiple respondents from different roles within the company are interviewed. To some extent, internal documents at the case company were used as an additional source to data, besides of the respondents' answers, also known as methodological triangulation (ibid). Member validation was also used as a method since all the respondents were offered to read true the summary of their answers in the empirical findings. Validation was also ensured through the transcription of interviews, since this ensures that the researcher does not get subjective when summarizing the answers in the empirical findings. Both these methods were used to minimize researcher bias, which is of extra importance in a qualitative case study approach (ibid.).

Transferability is about the application of the findings to other settings and cases outside the specific one for this research. In qualitative research, the author has an obligation to clarify for the reader in what context the research was made, and readers can from there gather an understanding of whether the findings are applicable to another situation or not (Bell et al., 2019). Transferability is more of a challenge in qualitative research compared to quantitative research given the fact that statistical analysis through numerous measurements is more used in quantitative research which makes comparisons easier (ibid.). To achieve transferability in this case study, each respondent's role at the company is described and the data collected from the respondents is thoroughly written down.

Dependability is about ensuring consistency throughout the research process (Bell et al., 2019). This was ensured by a time plan for the research, by information such as scheduled interviews, names of respondents, recorded interviews etc. When a change of direction for the research occurred on several occasions, this was discussed with both the supervisor at the university and the supervisor at the case company. This to make sure that the author consistently followed the somewhat decided direction of the research (ibid). The methodology chapter of the thesis also aims to ensure dependability and helps other researcher to act in a similar way if wanting to conduct similar research.

Confirmability refers to the reassurance that the research reflects the opinions and answers from the respondent and that it is not influenced by the researcher. Bell et al. (2019) states that this is even more crucial when the researcher, as in this case, is an employee at the case company. This is because the researcher might have access to sensitive information about the company or could be biased in the selection of and approach to respondents. To avoid this, continuous reflexivity was used which is when the author self-reflects throughout the process to avoid not

reaching confirmability. The author also had continuous discussions with both the supervisor at the university to avoid researcher bias, as well as with the supervisor at the case company to avoid leaking confidential information at the company.

## 3.7 Ethical considerations

Whether quantitative or qualitative research is conducted, ethical considerations are important to take into consideration. Four categories make out the ethical considerations that Bell et al. (2019) depicts: Informed consent, avoidance of harm, privacy and confidentiality and lastly avoidance of deception.

Informed consent was ensured by informing the respondents of the nature of the study, the aim and reason for it and how their replies were going to be used in the research. The participants were let known that they would be anonymous in the research to not deploy any personal information about them.

Avoidance of harm refers to both physical, psychological, social and economic harm. The respondents of the research should not be harmed in any way. The research should not harm the employees' position at the company in any way. This was ensured by letting the respondents voluntarily participate in the study if they wanted to. It was also ensured by not asking sensitive questions and letting the respondents know beforehand that they did not have to reply to all questions asked if they didn't want to.

Privacy and confidentiality refer to the protection of the respondents that participate in the research (Bell et al., 2019). This was ensured by anonymizing the respondents name, age and gender. In the cases where the respondents had a title within the company that could easily trace the reader back to the person behind it, the title was generalized in a way that ensured privacy while at the same time describing the employees' assignments at the company. The respondents were also assured that the records of the interviews were for personal usage of the researcher only and that they would be deleted when the research was finalized. Privacy of the organizations was ensured by using indexation for sensitive financial numbers and by a read through of the research by the supervisor at the case company to ensure that no confidential information was included in the research.

Avoidance of deception refers to the process in which the author makes sure not to lie, mislead or withhold information from the respondents to achieve a certain result (Bell et al., 2019). Deception was avoided by informing the respondents about the nature, aim and scope of the research and by not asking leading questions.

## 3.8 Critical reflection

A critical reflection makes out an important part of a qualitative study. Through self-reflection, the author can provide insights on potential weaknesses of the research and strengthen the credibility by showing awareness of areas to possible improve.

The case study focuses specifically on one manufacturing company in the construction equipment industry. Since the research only contain one company within one specific sector, it makes generalizability and applicability to other cases somewhat challenging. The regulations effects on companies may differ between sectors since the regulation of CBAM may not affect certain industries that does not use the materials that lies under the scope of CBAM.

The researchers position as an employee at the case company can be questioned. There is a risk that the employment colours the empirical findings and analysis of the research. At the same time, the position can contribute with knowledge that in other cases may be difficult to access. To ensure credibility despite the employment at the company, the author has focused on a topic that is outside of the employees own department, which means that the respondents are not colleagues that the author works with daily. It can be argued that since Volvo is a global company with many employees, there are still departments and areas that can be unknown to the author despite the position at the company. The respondents have also been reminded on several occasions that their participating in a thesis written by a researcher, not their fellow colleague.

Another critical reflection is the willingness for the respondents to enhance their workplace in the best way possible. Some critical reflection is needed to analyse the responses from the respondents. The respondents have been made anonymous, despite this there might still be an urge among the people to enhance their workplace and their job in a positive manner. A way to nuance the responses of the interviewees further could have been to take part of sustainability reports and secondary sources that either strengthens or dismisses the statements. The case company work together with trade associations so another possible angle would be to interview these as well to better understand the input that the case company contributes with in the case of evolving regulations.

# 4. Empirical findings

*This chapter will start off by explaining the ongoing activities for sustainability at Volvo CE right now. It will then be followed by the reactions to and strategy for the implementation of CBAM. Finally, a case example is presented where the effects of CBAM are demonstrated by the comparison of three different options for a production part.*

## 4.1 Volvos long-term commitment to sustainability

Several of the respondents describe Volvo as an early mover when it comes to sustainability (SDE 2; Commodity buyer 2, 2025). The CSR auditor (2025) describes the former CEOs engagement for sustainability in the 1970s:

> "P.G. Gyllenhammar, who spoke at Stockholmskonferensen in 1972 I think, said 'We are a part of the problem, but we are also a part of the solution'. Back then the focus was that Volvos trucks and machines would increase the efficiency of engines" (CSR auditor, 2025)

Since then, several initiatives have been taken for sustainability. Volvo decided to make a commitment to the Science Based Targets (SBT) in the fall of 2020 and they are also a part of the First Mover's coalition. (Volvo group, n.d.). The First Movers Coalition supports the development of key emerging climate technologies by using the combined purchasing power of its members. By stating this as a coalition, producers of these materials get an assurance that it's a successful idea to invest in more sustainable solutions since consumers on the market will in fact purchase it (Commodity buyer 2, 2025). Volvo group has set the goal to reduce greenhouse gas emissions for its own operations with 50% by 2030. Several of the interviewees describe how Volvo's strategy is not only to work towards improving their own work but also to help others. There is a way of ensuring that suppliers don't get away with unfair operations, but the ambition is still to work together with suppliers to improve their performance:

> "[...] They (the suppliers) receive a certain score, and some questions are stopping parameters which means that a score below a certain level is stopping the relation with the supplier. If they don't have any actions and can solve it, they will be phased out. [...] And that's something we also must consider, because there's a supply chain involved. So, we need to ask: can we help this supplier improve and address these issues? That would be a win for the world and the planet. Some people think, 'Here's a supplier, let's just phase them out' — and while that might solve the issue for Volvo, it doesn't solve it for the planet. The best thing we can do for the world and the planet is to support the supplier in making improvements." (Head of purchasing, 2025)

### 4.1.1 The triple bottom line of Volvo – Climate, people and resources

Volvo works towards sustainability by dividing their work in climate, resources and people (Head of purchasing, 2025). All three dimensions are represented in the sustainability scorecard, a scorecard which is a tool to measure and follow up on supplier development within the area (SDE 2, 2025). There are also other, recently started initiatives to improve the work with social, environmental and economic sustainability.

To ensure that employees and workers within the supply chains are treated in a fair manner, the process of auditing suppliers in extreme and high-risk countries on corporate social responsibility (CSR) was started in 2025. The idea is that Volvo will visit suppliers in extreme and high-risk countries to assess the working conditions of employees. The countries over the globe are divided into low, medium, high and extreme risk countries by Verisk Maplecroft, a third-party assessment company. Volvo plans their audits based on the suppliers they have in extreme and high-risk countries (CSR auditor, 2025). The auditors at the company have gone through training in SA8000, an international standard for social accountability management systems, to become auditors. The audit accesses different areas such as management commitment, health and safety, environmental management systems and employee rights. The auditors interview the employees at the factory to avoid only getting the perspective of the management. The supplier is assessed in 40 different parameters with the maximum score of 3 points for each parameter. If the supplier scores higher than 60% and does not get 0 points on a critical parameter, they will pass the audit (ibid.). A critical parameter is a highlighted area that is considered extra important for Volvo, an example would be the code of conduct. Out of the 36 parameters, 14 are considered critical. The goal by 2030 for these audits is that most of the suppliers in extreme and high-risk countries should be approved. The SAQ can work as an input to whether an audit is necessary or not, but the main criteria that the decision about an audit is based on is the definition of extreme and high-risk countries. The CSR audit is triggered by the SAQ which means that a possible audit could take place in a country that is not an extreme or high-risk country, if the scores are low for the SAQ (ibid.). The importance of looking beyond environmental sustainability is highlighted by one of the employees:

> "To me, sustainability is quite broad — it goes beyond just environmental thinking. It includes employees and the work environment as an essential part. If you have a working situation that functions for three months but isn't sustainable over two years, that's also sustainability to me. It's about relationships with suppliers too — if you squeeze your suppliers to the point where they're barely managing and eventually go out of business, then you don't have a sustainable business or relationship." (Head of purchasing, 2025)

Environmental sustainability is, however, a big part of the work at Volvo. The company is aware of the contribution to global warming throughout the industrial footprint and it is therefore important for them to work towards decreasing their environmental impact, in line with the Science based targets (Head of industrial planning, 2025). This is done by an evaluation of the geographical distance from a supplier to the manufacturing site (Commodity buyer 2, 2025), the ISO 140001 standard used by the company and a new product with an implementation of a software to measure suppliers' emissions. This tool will support buyers to identify carbon emission hotspots among suppliers and part numbers and discuss decarbonization levers to reduce the CO2 footprint short and long term The idea is that it will show the climate footprint on part number level (Purchasing sustainability project leader, 2025). This will simplify the comparison among components with consideration of environmental effects. There is also an ongoing Life cycle assessment (LCA)-program at Volvo which aims to display the environmental effects a machine has from cradle-to-grave.

Resources are worked with by a responsible approach to the usage of the world's resources. The KPI's measured in the sustainability scorecard when it comes to resources is that suppliers should be REACH compliant, which means that the products Volvo purchases shouldn't contain any banned substances and that the substances it contains is reported in a responsible manner. It also includes information if the supplier has been part of the Volvo group conflict minerals campaign and if any high-risk smelters are found in the supply chain. Additional to this, there is information about how many percentages of the Material Data Sheet (MDS) that has been approved. The MDS is a report of the containing substances in a part (Purchasing sustainability project leader, 2025). The supplier's relationship to resources is also assessed in the Self-assessment questionnaire (SAQ). The SAQ is a document sent out to suppliers for self-assessment. The document contains questions within 7 areas which are: *company management, human rights and working conditions, health and safety, business ethics, environment, responsible supplier chain management* and *responsible sourcing of raw materials.* The SAQ 5.0 is now a part of the supplier performance scorecard which means that it is reviewed regularly (SDE 2, 2025). There are some stopping parameters in the SAQ which means that even if the supplier shows a high score in general, it will not be approved if it does not get points on a stopping parameter question. This includes questions about working conditions, forced labor and environmental policies for example. The supplier must score above 60% and have 0 stopping parameters to pass the SAQ (Volvo CE, personal communication, April 29th, 2023).

### 4.1.2 Implementation of strategic goals & top management commitment to sustainability

The work during the last years has been about breaking down strategic goals and clarifying how the implementation of these can be done. The respondents all show ownership in relation to sustainability since several of them state that they are responsible for making this journey happen. It is important for the company that all employees should be able to contribute, no matter their position at Volvo. This is highlighted by the ways of implementing these goals, rather than just leaving them to be strategic visions:

> "When you scratch the surface, it's really there – it's not just policies; there is an actual way of working to ensure these things are followed through (working with sustainability). We will never be perfect, but we are constantly doing the best we can. Continuous improvements is a part of Volvo's DNA, and I believe this is something we genuinely live up to" (CSR auditor, 2025)

This view is shared by several of the employees, the importance of putting words into actions:

> "We have worked the last two years with breaking down something that is quite substantial to something very concrete. Both when it comes to expectations of ourselves and of suppliers both also in action to make sure that we get closer to building a better world. That is what I think about when I think of sustainability [...]. Building tomorrow, building a better world." (Head of purchasing, 2025)

The top-bottom approach is stated as important for the work with sustainability, among the respondents. The head of purchasing (2025) describes how sustainability now is on the agenda of the CEO and a discussion at board level which wasn't the case in the same way, a decade ago. Another employee reasons in a similar manner:

> "At Volvo group I can tell you – I'm proud to work at this company. This is why I'm still here because we have some leaders [...] Because nobody else, it's not enough (by the management) to tell them (the employees) "guys act". At the top of Volvo Group, it's Martin Lundstedt (the CEO of Volvo group) and he has decided himself to work on this and to deploy a strategy that we present to our suppliers." (Commodity buyer 2, 2025)

The CEO has decided to put the focus on sustainability through a strategy that follows through down to the work with suppliers (CSR auditor, 2025). The support from the board is highlighted as imported for Volvos work with sustainability (SDE 2, 2025) and there has been a notable change in the latest years where the CEO has prioritized this higher (Purchasing sustainability project leader, 2025). The topic is further described as something that's integrated into the daily work at Volvo and not only something at the side of business (Commodity buyer 2, 2025), but an example of this is also how the suppliers have to demonstrate how they work with sustainability in order to be chosen as a supplier for new parts (SDE 1, 2025). Another example is a long-term sustainability road map where the ongoing work

right now is to break down the goals and implement them in the organization (CSR auditor, 2025). This is also the status for several departments right now, to work towards the implementation of the strategic goals that were put into place a few years ago (Head of purchasing, 2025).

### 4.1.3 Supplier relationships

There are two main functions at Volvo who have the responsibility for the commercial affair with the supplier as well as the supplier relationship, these are the commodity buyer and the supplier developer engineer (SDE) (SDE 1; Commodity buyer 2, 2025). The SDE's main responsibilities is to build a sustainable relationship with the supplier and follow up on their performance in terms of quality, sustainability, capability and cost (SDE 1; SDE 2, 2025). The SDE's works closely with constructors, project leaders and commodity buyers to give input about the capacity their suppliers must build certain parts:

> "There is a very strong focus on sustainability. Right from the design stage, we (supplier developers) can actually get involved and have a say. For every APQP related to a new part, we at Volvo require an MDS (Material data sheet). That basically means, for example, if it's a metal sheet, the supplier must report exactly what that sheet contains to a specific company. For example, if we know that in a year's time, there will be an EU directive banning a certain mineral, we can already take that into account when designing a part." (SDE 1, 2025)

APQP stands for Advanced product quality planning and it's the process of implementing new parts into the production at Volvo. By using a defined method, the SDE's take part in making sure that products intended for use in customer products are aligned with the technical specifications and are available from the supplier given the time range of a project launch. To succeed with this, the MDS is asked of the supplier. The MDS is something that is obligatory for each part from every supplier. The MDS is sent to a third part company for verification and Volvo receives a message about whether it's approved or whether it's containing conflicted materials (SDE 1, 2025). It is followed up on meetings with the suppliers and a percentage show how many answered MDS the supplier has (ibid).

Each SDE is responsible for around 10-15 suppliers each. The supplier base is divided into different categories, according to SDE 2 (2025):

> "We have the divide of preferred suppliers, back-up suppliers, new suppliers and phase out-suppliers. [...] A preferred supplier is a business partner and should be leading within their technique and we should also have a certain amount of revenue towards them. The focus should be to work with these (preferred) suppliers"

The commodity buyer has the commercial responsibility for the supplier. They attend monthly meetings with suppliers to review their performance and present the

global VCE scorecard (Commodity buyer 1, 2025). Both the SDE's and commodity buyers attend education in sustainability internally on a regular basis. The education is provided through portals via Volvo's internal channels as well as by employees with sustainability expertise (SDE 1; SDE 2; Commodity buyer 1 2025). The education provides information on how to be aware about sustainability issues throughout the value chain when sourcing suppliers.

> "Regularly we need to award new material to suppliers. We call it the sourcing process. When we have a new product, a modification on a product etc. we need to award a supplier, find a supplier to produce this part and we have a sourcing decision and to make this sourcing decision we look at the scorecard. Meaning, that the supplier does not want to work on sustainability will not be selected" (Commodity buyer 2, 2025)

The SDE's interviewed describe the financial hindrance for suppliers to be the greatest challenges connected to sustainability (SDE 1, 2025) and the problems of getting suppliers to understand and provide for measurements of emissions connected to their production, something that is required according to the SBT (SDE 2, 2025). Overall, the engagement for sustainability varies a lot among suppliers. Some are at the forefront while others still struggle with financial means (SDE 1, 2025) or lack of knowledge in the area (SDE 2, 2025).

Over the last couple of years, sustainability has been included in the performance indicators towards suppliers which now are Quality, Sustainability, Cost and Capability (QSCC). Sustainability is now a part of the sourcing criteria for new suppliers and parts and employees such as buyers are obliged to increase their knowledge in their areas since it's a part of their work with suppliers. There is an ongoing work with contracts with suppliers to make sure that the sustainability work of the suppliers is in line with the strategic sustainability goals of Volvo (Commodity buyer 1, 2025). There is ongoing training in the purchasing department called integrated sustainability and the goal of the training is to teach employees how to use these tools in their work and not just on a strategic level (Head of purchasing, 2025). The sustainability scorecard makes out 25% of the entire performance scorecard that is used to follow up on suppliers. Each supplier has its own scorecard and can follow their process visually as they improve. This scorecard has been quite successful so far, one respondent describes how the visibility of the green color stating that something is approved, and the red color means that there is some work to be done, really has influenced suppliers (Purchasing sustainability project leader, 2025).

### 4.1.4 Uncertainty & Complexity

Uncertainty and complexity are a constant present factor at Volvo. It is still a challenge at Volvo to understand the effects of the company's activities over the globe. One respondent says: “I think the challenge is still to get a fair and accurate picture of the environmental impact of the changes we make. We can look at CO2 emissions—that’s relatively easy to calculate—but that’s only one part of it” (Head of industrial planning, 2025). He continues by describing the perspective of the entire supply chain, starting with transportation from the supplier to distribution to the final customer:

> “We have RoRo transport—long-distance, roll-on/roll-off ships. These have a very high level of CO2 emissions. So, our footprint is heavily affected, both in terms of the supply chain—can we have suppliers with shorter transport routes, and suppliers who have a strong environmental mindset—and in terms of how long the deliveries are to our customers from where we are located.” (Head of industrial planning, 2025)

There is still a lack of information about what effect the industrial system has on the planet, in terms of measuring the tier 1,2,3 etc. suppliers' impact. Geopolitical events cause delayed transportation and difficulty in supplier relationships. Volvo CE has suppliers in Europe as well as north America and Asia which means that some transportation flows are operated by boats and the long transport times and the uncertainty about the political climate causes problems for the company:

> “With purchasing, the tricky thing is to… there is uncertainty. You know the supply chain can be complicated; it can be complex. To give you an example, recently I don’t know if you heard about the attack in the red sea so the products coming from Asia for example took longer time to come to us” (Commodity buyer 2, 2025).

With suppliers in different countries comes the ability of awareness connected to cultures of different kinds. A SDE talks about how some countries may have a strict hierarchical approach within their companies while others are flatter. This can be more time consuming since the information has to go through several levels before it reaches the assembler at the manufacturing site of the supplier, for example. This is a difference from Sweden for example, since the respondent experience is that it’s easier to talk directly to an assembler in this country compared to others (SDE 2, 2025).

Even though sustainable issues has come to light more during the past decade, companies still need to make a profit to succeed. This is somewhat of a balancing act and it’s not always easy to compare different sustainability aspects in the same way as it is with price (Purchasing sustainability project leader, 2025). Some suppliers still put more effort into capacity and quality since it’s in their everyday work while sustainability still tends to be a side subject at times (SDE 1, 2025).

## 4.2 The implementation phase of CBAM

The Carbon Border Adjustment Mechanism (CBAM) regulation is managed by the customs & trade department, the purchasing department and public affairs at Volvo. The head of trade management is involved at an early stage with new regulations before they become a part of Volvos operational processes and works with free trade agreements and rule changes. The respondent's department works closely with public affairs which is the department that help creates a position connected to environmental regulations and advocate for it based on strategies and input from business and subject matter experts. Public affairs also have a connection outside of the company and can express Volvos opinions about specific regulations to trade associations or the government, for example (Head of trade management, 2025). The regulation of CBAM is different from others in the way that it applies with effect while it's being implemented. The department of trade management works closely with the purchasing department since this is the area where the regulation is implemented. The reason why a trade department is involved in an environmental regulation is due to the classification that decides if goods are affected by the CBAM regulation or not.

The HS-code connected to imported goods, decides whether the CBAM regulation applies or not. The HS-code is short for harmonized commodity description and coding system. This code if usually a 6-digit number that specifies the material the product contains and what it is. The code is used in trade and customs, and it is used for tariff calculations, customs clearance and regulatory compliance (FedEx, n.d.). If the goods are affected by the regulation of CBAM, as of now, the emissions caused by the production of the goods needs to be reported (Head of trade management, 2025). The purchasing department gets involved since they are the owners of the relationships with suppliers, it is they who decide where materials should be sourced from and the ones who need to collect the information about emissions from suppliers.

### 4.2.1 Challenges with CBAM

As of now, the regulation is that Co2 emissions must be reported mostly for raw materials and to some extent products that are imported into the EU, which means that complete machines are not affected by the regulation (Head of industrial planning, 2025). The head of trade management (2025) describes how the usage of HS-numbers for classifications can cause problems for a large importer like Volvo. This is because the HS-numbers can apply to big pieces of metal as well as small screws, even though the emissions are very low for certain parts. These parts need to be monitored even though they contribute with close to nothing of the total

emissions. Volvo has a 90/10 relationship now where approximately 10 % of the imported volume stands for 90 % of the emissions (ibid.).

There are discussions about broadening the scope of CBAM which means that it can start to apply on complete machines as well as other materials such as plastic, rubber, glass etc. The public affairs department are involved in discussions about this together with the rule makers and Volvo actively tries to understand what affects this would have on them as a company. As the regulation exists right now and as it will be from January 1st, 2026, when certificates are needed to import these raw materials into the European Union, the financial effect on the company will be rather small (Head of industrial planning, 2025). It is of importance for Volvo to try to affect the regulations as they are contributing to a skew competitive situation on the market right now. This is because the regulation makes it cheaper to buy complete machines outside of the European Union rather than buying material outside of the EU and manufacture the machines within the borders. This will affect the manufacturing competitiveness for industries within the EU. There is also a potential risk that the cost level within the EU will increase with this regulation which might have a potential effect on Volvos export outside the borders (Head of trade management; Head of industrial planning, 2025).

There is a challenge with the regulation and that is that it is not customized for the reality and for companies importing goods daily. One imported part can consist of several materials and components and the supply chain behind it is complex, this is explained by the head of trade management:

> "Lawmakers have an extremely hard time understanding the fact that a product can consist of a great many components. They have this idea that it's basically about moving a small item from one country to another—that's their worldview in this context. They haven't grasped that we have thousands of suppliers who in turn have suppliers and sub-suppliers, where in fact the actual source of the emissions may be two or three levels down in the supply chain. So, if we're to work with the actual value, which is the current requirement, that means the purchasing department needs to have a dialogue with the supplier we purchase from, who in turn must request the information from their supplier and so on." (Head of trade management, 2025)

This is a massive administrative process that requires a lot of time and effort to collect all the information and where the cost for the administrative work is likely to succeed the cost of the certificates for CBAM (Head of trade management, 2025).

CBAM could also have an indirect effect for Volvo since the company sometimes will act as the importer, meaning the one responsible for reporting and buying certificates, and sometimes being indirectly affected through the purchase of goods

from European suppliers that import their material from outside of the EU. The industrial planning department is now working together with the purchasing department to try to understand what possible effects this may have on suppliers (Head of industrial planning, 2025). This may land as a strategic choice for buyers in the future since a decision needs to be made whether to be the importer and accept the extra costs of administrative measures or to purchase material from a European supplier and perhaps face higher prices for materials due to the suppliers' add-on for the certificate costs (Head of trade management, 2025).

### 4.2.2 Scope of the regulation and defining values

The calculation model today that the European Commission has decided on is based on true values and this has been the case since three reports ago (Head of trade management, 2025). Before that, importers were able to use default values which is an appreciation about the emissions for each material and this number is thereafter multiplied with the weight of the imported goods. There will be a possibility to use default values again when the demand to purchase certificates are put into place in January 2026, but it is still unclear how high these default measures will be and whether Volvo would like to use them or not (ibid.). As the situation is now, it is not likely that the regulation of CBAM will affect Volvo too much financially. However, if the scope were to be broadened and complete machines were to be included, the situation might be different since Volvo produces heavy machines with a lot of steel and aluminum in them (ibid). Even though the cost for the certificates won't be too extensive, the head of trade management (2025) still believes that this regulation will be a part of buyers purchasing strategy in the future, that it needs to be considered in the choice of supplier for new material.

### 4.2.3 Traceability and consistency

Lately the EU has come up with many new environmental regulations with a sustainable purpose. This includes regulations such as EUDR, CBAM, regulations for PFAS, all connected to Fit for 55. What they all have in common is that they use the HS-number to define what products are included in the scope (Head of trade management, 2025) describes how this is not ideal for environmental regulations since it is a number used in trade contexts that does not take sustainable components into consideration. This is where Volvo gets affected since the customs declaration requires a lot of information. This is a challenge for big companies like Volvo since they import thousands of products every day and this information is not easily available in the way that it is requested. The traceability can be lost in the transportation and storage of gods since not all parts have their own serial numbers. Some regulations require traceability on a specific part number level which means

that it isn't sufficient to say that a specific part number for screws contains a combination of materials, the company needs to be able to report the content of one specific screw since this may change from batch to batch or depending on the supplier manufacturing it (ibid.). There is a coming legislation requiring product passports for some products, that has only begun to be implemented on the market. The thought behind it is to connect traceability to a specific product. These demands are now starting to apply to batteries but will be extended to more products by 2030-2040. The head of trade management (2025) says that this is somewhat of a backwards way of doing it since the regulation for product passports would have made regulations such as CBAM and EDR much easier, if it was implemented beforehand.

There is also an issue with these regulations not applying to small and middle companies (SMEs) this is because bigger companies like Volvo usually use SMEs as suppliers. When Volvo has a demand on them to report emissions, but smaller companies do not, it becomes much more challenging for Volvo to gather the information required for reports (head of trade management, 2025). The head of trade management (2025) describes this to be a lack among the ones who create regulations, that there is a lack of understanding the complexity of reality. It's also confirmed by another employee who states that one of the biggest challenges of working with sustainability is the smaller companies who lack resources to improve:

> "For smaller companies, it's really about competence and understanding—how to approach this, and whether they have the resources to assign someone who knows this area and can work with it. I think it's difficult for smaller companies to manage, since they usually don't have large margins. Unless they have larger parent companies that can support them, and that's a challenge where they'll likely need help." (Purchasing sustainability project leader, 2025)

Another challenge is that Volvo cannot report their emissions connected to CBAM as one unit. There will be a several reporting units in several EU countries for Volvo group, which will cause a lot of extra work for the company:

> "They (the rule makers) have a really hard time understanding how a corporate group functions — the fact that we are required to report on each legal entity for which we import, while we're saying that ideally, we would like to consolidate it at the group level so that we could perhaps manage everything in one place. We'd report in one place, purchase the certificates in one place — but under the current regulations, that's not possible. So, we have several companies in Sweden. We have Belgium, France, Germany — all of those are separate legal entities, and it is at that level that you must report and purchase your certificates." (Head of trade management, 2025).

### 4.2.4 Possibilities with CBAM

Volvo has a high standard when it comes to dealing with sustainability issues which means that they are well prepared to face these new regulations. The head of industrial planning (2025) believes that this regulation can work as somewhat of a barrier for imported goods that do not live up to the environmental standards of the EU. Since Volvo is at the forefront with sustainable products, this might benefit the company's position on the market (Head of industrial planning, 2025). The respondent also describes how this builds a fossil free industry and strengthens the EUs competitiveness on the global market since the regulation forces suppliers to work with these questions.

## 4.3 Product development for SSCM

As a part of the company's mission to meet a net zero value chain, Volvo keeps innovating and finding new developments for their machines. Product owners' responsibilities at Volvo include a technical responsibility to ensure that the machines live up to customers standards and demand. Product owners work a lot with consumer input alongside with the analysis of competitors activities to stay competitive. There have been some alarms inside Volvo that the complexity has grown with having suppliers far off, both when it comes to transportation but also ensuring parts that are produced in a fair manner (Senior product owner, 2025). Right now, the goal for Volvo CE is to produce machines with a recycling rate at 97-98%. It's on the agenda to reach this goal and as of now, the wheel loader is at a 88-92% recycling rate. This is partially due to the counterweight which is a part that makes up around 13% of the total machine's weight. The counterweight is as of now not recyclable due to the material it is made of and how it is compound and at the end of life, the counterweight is put to landfill. The critical boundary for the recycling rate at Volvo is 92% which means that they are performing under the goal level now. Customers often have a demand for a certain degree of recycling rate and if the low recycling rate of Volvo's machines continues, it will affect their competitiveness on the market (Senior product owner, 2025). By working solely with the counterweight, Volvo would be able to reach their goal level, a level that the company has been at earlier (ibid.).

### 4.3.1 Case example: Counterweight

To evaluate and potentially change the current counterweight used at Volvo, a life cycle analysis specialist in collaboration with design engineers have investigated the environmental and economic impacts of the counterweight component. There are three options for this part: 1) the existing counterweight, FCWT: Manufactured in Asia, the design of a casted steel frame filled with a mixture of concrete and iron waste (LCA specialist, 2025). 2) A casted grey iron counterweight: start produced

in either China or France. 3) A new steel slab counterweight made from steel slabs distributed to the factory and welded together at the site (LCA specialist, 2025). The steel slabs counterweight also gives the option to adapt the products weight at the manufacturing site, offering the case company more flexibility in production (Senior product owner, 2025). The challenge with option 2, the grey iron counterweight is that there is not that many suppliers available to deliver these components due to its weight. There is however an option of dividing this component into several parts which could make it easier to find more suppliers (LCA specialist, 2025). The environmental and economic implications of these options are summarized in the table below:

*Table 3. The LCA calculation of the three different options for counterweights.*

| | Weight (Kg) | Raw material (kgCO2e) | Manufacturing process (kgCO2e) | Inbound log. (kgCO2e) | EoL (kgCO2e) | Sum PCF (kgCO2e) | Shadow CO2e cost | Purchasing kost InkL Internal maufacturing (SEK) Index cost | CBAM taxes (SEK) [1ton Co2 -> 100€] | Value at EoL (SEK) |
|---|---|---|---|---|---|---|---|---|---|---|
| FCWT | 4300 | 7 945 | 86 (SE) | 108 | 110 | 8 249 | 2 120 | 0 | 9 630 | -3 010 (Landfill) |
| Grey Iron | 4300 | 6720 | 6 497 (CN) ; 1 557 (FR) | (xx) | 104 | 13 321 | 1 925 | 2 707 | 9 288 | 12 900 (recycle material) |
| Seel CWT (Slabs) | 4300 | 8 610 | 162 | 1 011 | 104 | 9 889 (1 527*) | 2 047 (331*) | 13 829 | 0 | 12 900 (recycle material) |

All calculations were performed by an LCA specialist at Volvo. Some figures marked with (*) represent the impact of using low-emission steel, an option that is not currently used but gives an understanding of the difference it would make to use this type of steel. The weight of all options is identical since it's the required for the function of this product.

In assessing the environmental impact of the three counterweight options, the raw material stage reveals that the grey iron counterweight has the highest Co2 emissions, while the FCWT exhibits the lowest emissions.

For the manufacturing process, the grey iron counterweight again demonstrates significantly higher CO2e emissions. This figure includes the energy required for casting, and the emissions vary depending on whether the process takes place in Europe or Asia - with manufacturing in Asia resulting in a higher Co2e footprint.

As for the Steel CWT, the calculations are based on the transportation to Sweden and the process required at the manufacturing site.

Inbound logistics CO2e accounts for emissions generated during transportation of materials to the manufacturing site. For the grey iron counterweight, this emission is embedded within the manufacturing Co2e figures, as defined by the LCA documentation. Among the three options, the Steel CWT generates the highest total inbound logistics emissions.

End of Life (EoL) is the Co2e released when recycling the material or landfilling it. Both the grey iron counterweight and the steel counterweight can be recycled,

resulting in equal Co2e emissions at this stage. In contrast, the FCWT must be landfilled, as it cannot efficiently be recycled, contributing more significantly to waste and long-term emissions.

The Product Carbon Footprint (PCF) is calculated as the sum of emissions from the four life stages: raw material, manufacturing, inbound logistics and EoL. Based on this calculation: the grey iron weight has the highest contribution of Co2e, followed by the steel counterweight and the FCWT has the lowest overall PCF.

Shadow cost CO2e - an economic representation of environmental impact - is included to quantify the societal cost of emissions. In this calculation, the shadow cost has been estimated to 1000 SEK per ton of Co2e. However, forecasts indicates that the trade market with Co2 certificates will reach much higher levels when ETS and CBAM is fully implemented (LCA specialist, 2025). As indicated by the figure below, the existing counterweight FCWT has the highest shadow price and the grey iron counterweight the lowest, except in cases where low-emission steel is used, which results in the lowest emissions overall for the steel alternative.

Purchasing cost is described through the usage of index. This is to ensure confidentiality. The current FCWT is used as the baseline (0 SEK) The option of grey iron shows an indexed cost of 2707 SEK above the baseline, the steel CWT an indexed cost of 13 829 SEK, making it the most expensive one for Volvo to purchase.

From January 2026, CBAM taxes will apply to certain raw materials and imported goods. Although the precise cost of CBAM certificates remains uncertain, Volvo has estimated likely expenses based on current guidelines. Results show that Volvo will have to pay 9630 and 9288 SEK, respectively, for importing the existing FCWT or purchasing the grey iron counterweight instead. If choosing to use the option of the steel counterweight instead, the cost will be 0 SEK since the sourcing of material and manufacturing occur with the EU.

Value at end of life (EoL) is, for the FCWT, the cost the customer must pay to leave the counterweight to landfill, the cost is 3010 SEK/counterweight. If the option of grey iron or steel slabs is used instead, the counterweight can be recycled which would generate a revenue of 12 900 SEK/counterweight. These values are estimated values based on the current average scrap value. The probability is that this value will increase over time as well, based on the Co2 price on the market (LCA specialist, 2025).

*Table 4. the sum of shadow Co2e cost, purchasing cost, CBAM taxes and Value at EoL.*

| | Sum PCF (kgCO2e) | Shadow CO2e cost | Purchasing kost Inkl. Internal maufacturing (SEK) Index cost | CBAM taxes (SEK) [1ton Co2 -> 100€] | Value at EoL (SEK) | TCO [Inc. ICP] (SEK) |
|---|---|---|---|---|---|---|
| FCWT | 8 249 | 2 120 | 0 | 9 630 | -3 010 (Landfill) | 12 640 [14 760) |
| Grey Iron | 13 321 | 1 925 | 2 707 | 9 288 | 12 900 (recycle material) | -905 [1 020] |
| Seel CWT (Slabs) | 9 889 (1 527*) | 2 047 (331*) | 13 829 | 0 | 12 900 (recycle material) | 929. [2 976] [1 230*] |

This table shows the sum of the product carbon footprint for each option. The grey iron counterweight has the highest and the FCWT the lowest. The purchasing cost + the cost for the CBAM certificate + the value at EoL makes out the Total cost of ownership (TCO), the value expressed within the parentheses additionally also includes the shadow cost of Co2e. The results show that by only looking at the sum of product carbon footprint, the counterweight that is currently used is the option that contributes the least to Co2e emissions. When instead looking at the TCO, the results change significantly. The TCO depicts that the FCWT has a much higher SEK cost and that the cheapest option is the grey iron counterweight. This is both with and without the shadow cost.

# 5. Analysis and Discussion

*In this chapter the result of the thematic analysis concluded by interpreting the empirical findings is presented. The analysis is connected to the theoretical framework, and both confirm and dismisses existing theory.*

## 5.1 Strategic commitment to sustainability: From vision to practice

SSCM is about embedding sustainable strategies into everyday operations. At Volvo, a top management commitment to sustainability is mentioned by several of the respondents as well as highlighted as important to drive sustainable development. Epstein & Buhovac (2014) describes leadership and top management commitment to sustainability as a key factor to a successful implementation of it. A respondent specifically points out the CEO's engagement for sustainability and how his change of direction about the company's strategy has shifted the course of the strategic work to be more sustainability oriented. The company's strategic position is formed by normative pressure, which is the impact the surroundings have through norms and culture (DiMaggio & Powell, 1983) as well as internal drivers, Volvo's own stance regarding sustainability. Signs of this can be identified through the signing of the SBTi's in 2020. The Science based targets isn't a coercive regulation but rather an encouragement for companies to take responsibility for their operations and emissions. A similar initiative can be seen in Volvo group being a founding member of the First Movers' coalition to influence the market to make more conscious choices in their procurement processes. It's unclear whether these initiatives are solely based on normative pressures, mimetic pressures, internal pressure or a bit of all but no matter what, the company is not just at the reaction-stance where they are forced to adapt to environmental regulations. Volvo group is described as a first mover, and a head of their game which gives indications that the company isn't affected as much by mimetic pressure, the pressure to imitate/copy competitors on the market (ibid.). By engaging in these initiatives, Volvo group shows signs of a proactive approach to their strategy of sustainability.

During the last years, there's been an ongoing process of turning strategic goals into measurable actions at the company. This work is ongoing across several different departments, such as departments related to sustainability, purchasing and industrial planning. Several initiatives have risen from this, such as the development of the sustainability scorecard for suppliers, the measuring of Life Cycle assessments of machines, CSR audits of suppliers in high-risk countries. All these initiatives have one thing in common: the outputs of the initiatives are

measurable which gives a clear indication of when an activity is performed or not. This is a way to overcome the barrier of not being able to evaluate sustainable performances, in line with the findings of Centikaya et al. (2011) who states that evaluation is impossible without proper ways to measure improvement. This means that the company will be able to track, for example, the outcomes of the suppliers work with sustainability, and it will also give the supplier an incentive to improve their work. According to Cloutier et al. (2020) constant measurement, comparison and evaluation is key to succeed with sustainable development within a supply chain. It's the processes at the company that leads to an output of a potential sustainable performance. With a structure for the processes, the sustainability strategy can efficiently be integrated into the operational practices (Epstein & Buhovac, 2014).

Shekarian et al. (2020) identifies promotional programs as a key factor for achieving SSCM. This includes training and education of employees to create awareness about sustainability. Training and education reach beyond the internal perspective of educating employees, it's also about creating awareness about society as a large and to help train suppliers, for example (ibid.). Many of the respondents' state that they have undergone internal training in sustainability and that while there can still sometimes be internal reluctance to sustainability, it's not a question of whether it should exist or not at the company. Back when sustainability was still a new topic to engage in, more employees questioned the integration of it into practices. One employee also states that the sustainability measurements have increased his engagement and motivation in the area. Despite initiatives to help educate suppliers, education and lack of knowledge among these is still described as a challenge connected to sustainability. This is in line with a barrier to SSCM identified by Luthra (2011) who stated that the chances are higher for a company to succeed if they educate both employees and suppliers. During recent years there has been an increase in demands of transparency and measurements of emissions which presupposes that suppliers have the knowledge required in how to measure for example Co2. Since this is sometimes still described as a barrier for suppliers within Volvo, the lack of knowledge on how to measure emissions or work with sustainability, further training of suppliers might be needed.

## 5.2 Navigating institutional pressures: CBAM and beyond

According to Porter & Linde (1995) A well formulated environmental regulation can help with uncertainty in the market as well as breed innovation and competitiveness. The need for clearly formulated regulations to remove uncertainty

in the market can be confirmed through the respondents' answers in this research. The case company's experience of the CBAM regulation is still filled with a degree of uncertainty. The information about how the certificates will affect the company's performance is still uncertain. In several ways, the regulation of CBAM isn't adapted to the complexity of the business climate since the classification is based on a trade code rather than a definition that stems from sustainability. This is in line with Porter & Lindes (1995) findings, that only well-designed regulations, stringent yet flexible, are beneficial for a company's competitiveness and innovation. The regulation of CBAM neither takes into consideration that a company may have many sub-branches in different countries nor that retrieving the information about emissions from all suppliers will be time consuming. Some scholars state that environmental regulations could in fact work as an external hindrance to achieving a sustainable supply chain (Oelze, 2017). In the case of Volvo, CBAM may not hinder the continuing process of developing SSCM, but administrative measures are needed to handle the regulation in the proper way.

The problem for global companies is that the transaction costs increase when they need to report for several different legal entities. Large companies also face the problem of having smaller sized suppliers that does not face the same external regulations. This is where a challenge of reaching a sustainable supply chain occurs since the case company may be forced to obey to environmental regulation while the suppliers are not. A potential external barrier to reach sustainability, and thereby a competitive advantage on the market, will be if the supplier is reluctant to engage voluntarily in sustainability. According to Walker & Preuss (2008) it is of key for a company to make sure that its suppliers work with sustainability aligns with their own strategy. With the regulation, transaction costs increase such as the cost of searching for information about emissions at suppliers to understand the increased price effect it will have on the company's procurement process or the information searching and costs of designing a new product that can avoid the costs of the new regulation. Volvo has several suppliers in Europe and if these import material from outside the EU that falls under the CBAM-regulation, the case company could face new negotiations due to the supplier's increase in prices due to the new regulation.

These additional costs need to be balanced throughout the development of a sustainable supply chain. Supply chain activities that will affect the costs and transactions costs of the regulation is partially the procurement process. Since CBAM is based on the emission released from production of the product, the case company has a chance to affect the outcome through monitoring the suppliers. Monitoring costs is another example of a transaction cost according to Coase (1937). Although the cost will increase by auditing suppliers and trying to drive them in the right directions through measurements of sustainability activities, the long-term outcome could be to the case company's advantage since monitoring of

the emissions let out could both decrease the cost connected to CBAM as well as lower the environmental impact. To reach this goal, employees working closely with suppliers need to have the right training and knowledge about sustainability and environmental regulations. Promotional programs, such as training and education helps creating awareness among employees (Shekarian et al., 2022) and will make it possible for commodity buyers to take environmental regulations into account in sourcing decisions.

By taking a proactive approach to the regulation of CBAM and exploring different options before the regulation is fully implemented, the case company can avoid additional transaction costs. Coenen et al. (2018) highlights the importance of a robust decision-making tool to reach a sustainable supply chain, despite regulatory changes and change in consumer demand. The proactive engagement of evaluating environmental regulations effect in a sourcing decision could therefore prepare a company for external events that may increase transaction costs. This is in line with the findings of Shrivastava (1995) that a proactive approach can lower transaction costs and thereby increase efficiency and sustainability of a supply chain.

## 5.3 Sustainable innovation and long-term competitiveness

The external and internal drivers are both drivers to sustainability, according to DiMaggio & Powell (1983). These drivers can be converted into a sustainability strategy at a company, if handled in the right way. This includes broadening the scope, looking over the three dimensions of sustainability: environmental, economic and social, as well as the metrics to measure the improvements and initiative to ensure sustainability throughout the company. The counterweight at Volvo CE exemplifies a situation where these internal drivers are converted into an innovation of a new way of designing a product. Volvo has worked with sustainability in line with the SBT's since 2020 and with that comes the responsibility of using resources and releasing emissions in a responsible manner. The example of the counterweight came as an idea from an employee to improve the net zero value chain. This shows a connection to internal drivers, since it's an action that is not forced, but it reflects the internal values of Volvo. However, this initiative is also in line with an external driver which is consumer demands, a normative pressure (DiMaggio & Powell, 1983). By not improving the recycling rate of the wheel loaders that Volvo CE is currently building, the competitiveness of their machines may decrease. The product design is modified as well as the supply chain design, since some of the options include suppliers that are geographically closer to the manufacturing site in Sweden. Vargas et al. (2018) states that this is a way to reduce uncertainty and that it can be beneficial to achieve

sustainable supply chains, to have suppliers geographically close by. According to Shekarian et al. (2022) sustainability strategies can be implemented and accelerated through innovation and this example shows the connection between Volvo's strategic goals for a Sustainable supply chain management, such as aiming towards net zero emissions and increasing the recycling rate of the machines, being put into practical actions.

The example of the counterweight also contains coercive pressures, the pressure to force a company to act in a certain way due to regulations (DiMaggio & Powell, 1983). The regulation of CBAM will increase the transaction cost of continuing to purchase the existing counterweight from the supplier in Asia. Expanding the scope, looking at environmental incentives, the sustainability transaction costs are also higher for this alternative in some ways since it requires a longer transportation route to the manufacturing site. However, changing to a new alternative means additional transaction costs such as those of negotiating contracts with new suppliers and information searching connected to a new sourcing process. If the company would choose the option with the steel slabs counterweight, a form of vertical integration will occur since that would mean that Volvo chooses to in-source the manufacturing of the counterweight at their own facilities. According to Stuckey & White (1993), a company should be conscious of vertical integration since it's costly and difficult to reverse once it has been done. Vertical integration should only occur in cases with high asset specificity, high transactions since the set-up costs for vertical integration are quite large. A company should only vertically integrate when it is necessary, with examples such as the market being young and insecure, the relations to suppliers are unstable or when the integration can lead to more control of the market, making it more difficult for competitors to enter it (ibid). From the information from respondents, the reason for a change of product type is to increase the recycling rate and take the next step towards a net zero value chain, combined with the impact of the new CBAM legislation. The option to continue with the steel slabs option, insourcing the production, is therefore neither due to a young market or a way of getting more control of the market and keeping competitors away. A company should carefully investigate whether a vertical integration is needed before choosing this as an option (Stuckey & White, 1993).

The calculation shows an example of how the perspective of the entire supply chain gives another result. By solely looking at the purchasing price of this product, not including transaction costs or the sustainability perspective, the most beneficial option is to keep the existing product. However, when including costs of certificates due to regulations, shadow price for Co2 and the value and responsibility at end of life, the result changes. The calculation made by Volvo contains the purchasing cost of CBAM-certificate but with that comes the information search for emissions

released from the supplier's production, the negotiation costs of putting up potential new contracts when CBAM starts to apply and monitoring costs for making sure that the suppliers report the right amount of emissions that they are releasing. Besides the perspective of additional transaction costs comes also the uncertainties of new regulations. The case of bounded rationality can be identified and connected to the case of the counterweight since there is still uncertainty regarding the usage of actual or default measures when reporting Co2 emissions, if there will be a change in the regulation due to the channels of influence that companies have connected to governments and trade associations. If all the measurements were known now and there was no uncertainty of when and how the regulation would start to apply, there would be less questions regarding the three different alternatives of counterweights. According to one of the respondents, it has been the case before that Volvo has prepared a proactive approach to a new legislation and when the implementation date of the regulation gets pushed forward, the competitors have benefited from doing nothing. Williamson (1996) argued that contracts between companies are unable to manage bounded rationality and opportunism alone and called for institutionalized measures to provide companies with more certainty. As described by respondents at Volvo, the case has been the other way around where unfinished regulations put into action have increased uncertainty instead.

The shadow price for Co2 in the calculation is not an actual price that Volvo must pay for the different options, but it is a way to integrate environmental effects into the decision making. SSCM is about integrating sustainable development within every process of the supply chain (Carter & Rogers, 2008) and this is done by including the shadow price of Co2. By doing so, Volvo takes responsibility for society and the earth as a whole and does not just look at the most beneficial option for the company. By responsibly handle the waste and the end-of-life stage of the supply chain by calculating the monetary value at end of life as well as consider the environmental effects of the different options, the circularity of the supply chain will increase and lead to a higher level of SSCM (Mathivathanan et al., 2018). This goes in line with increasing the company's competitiveness on the market since there is a demand on the market for higher recycling rates for machines, according to respondents at the company. By doing so, Volvo operates in line with the normative pressures, consumer demand for machines with higher recycling rate and thereby indicates that the external driver could in fact enhance sustainability.

## 5.4 Discussion

This case study aimed to explore the effects that the environmental regulation of CBAM has on a manufacturing companies supply chain and procurement strategy. To address this, the author has applied the theoretical framework of sustainable supply chain management and transaction cost theory to understand how a manufacturing company creates a strategy and implementation of new environmental regulations. The exploration about a company's way of working with environmental regulations will create an understanding about their proactive or reactive stance in sustainability, since the sustainability strategy of a company must align with the regulatory pressures.

The findings of this study shows that the environmental regulation of CBAM does not necessarily add high cost to a large company like Volvo CE. However, the empirical findings showed transaction cost to be much higher than the actual cost of the regulation. The direct cost of the regulation will be for the purchasing of certificates, starting January 2026. The transaction cost, costs as information searching for the emissions released by suppliers, monitoring costs of following up the emissions released at suppliers to avoid opportunism, where suppliers withhold the correct information about emissions will be higher than the cost of the certificate. To make sure that suppliers measures emissions correctly and work with these sustainability issues, the demands put on supplier must strategically align with Volvos sustainability strategy. This means that the regulation puts pressure on the company to gather information about emissions from a supplier and in order to keep the costs down for the certificate, the case company needs to establish trust in the relationship to be sure that the emissions are reported in a correct way or make sure that are done that by monitoring the suppliers performance. The internal drivers for sustainability at the case company drives sustainability strategy and actions for it. The case company has worked with sustainability for a long time, and it is a part of the culture at the company which is identified in the respondents' ways of describing how employees at Volvo no longer questions the work with sustainability. It is also a part of the work towards suppliers since it is followed up in the scorecard and evaluated as a part of their performance. This is in line with the findings of Prasad et al. (2020) who found that the organizations internal environment is important to drive sustainability within supply chain management. The regulation of CBAM will affect the company to some extent, not financially for the cost of the certificates but through increased transaction costs. The case example in this study indicates that it could be of value to evaluate the CBAM effect on procurement decision, since the inclusion of it in a case with a heavy product gave a different cost than when excluding it. Volvo can choose to take a reactive approach to the new regulation since the cost of the certificate will not hinder the business of the company moving forward. However, the company can strategically

position themselves and take a proactive approach by evaluating the options of the different counterweight and take environmental aspects and environmental regulations into account.

In this case study, CBAM is described as contributing to additional transaction costs through monitoring cost as well as negotiating cost. Since CBAM is based on the weight of a component and emissions released when producing it, the supplier relationship requires trust to ensure that the suppliers report the true values of emission. The case of opportunism may occur if a supplier chooses to take advantage of the situation and report values that are not correct. These complications are put on companies that produces machines in the EU and import components from outside of the EU. Companies producing and selling machines outside of the EU does not face the same regulation and may therefore gain a certain advantage over the companies that face additional transaction costs due to the CBAM regulation. CBAM only applies to raw materials and some finished components but does not apply to complete machines or more complex products, such as an engine. The respondents at Volvo see this as a hinder to competitiveness of production within EU since it can be cheaper for a customer in the EU to import a complete machine from Asia rather than purchasing it from Sweden for a higher cost since the Swedish manufacturer may be facing higher import prices due to the legislation. However, by integrating the CBAM cost in the calculation of different options for the counterweight in the case example, a more holistic perspective of a sourcing decision is achieved. By proactively engaging this cost in the selection among different product, the regulation contributes to product and procurement innovation since the most beneficial option differs when looking solely at the purchasing cost compared to integrating the cost of CBAM, Co2e shadow cost and value at EoL. CBAM, together with other environmental measurements can therefore, in some cases, drive innovation.

# 6. Conclusion

This study has explored the impact of Carbon Border Adjustment Mechanism (CBAM) on a manufacturing companies supply chain and procurement strategy, using Volvo CE as a case study. By applying the theoretical lenses of Sustainable Supply Chain Management (SSCM) and Transaction Cost Theory), the research shows how a well-established industrial company navigates the complexities of environmental regulation, institutional and internal pressures and innovation towards sustainability.

The findings show that CBAM does not currently lead to a high degree of direct financial costs for such a large company. However, it introduces considerable transaction costs related to monitoring of suppliers, information gathering and regulatory compliance. This indirect cost highlights the perspective of holistic thinking when working towards a sustainable supply chain and puts pressure on transparency and collaboration with suppliers to maintain a competitive supply chain. The regulation of CBAM has not contributed with unbearable barriers for the case company but calls for strategic alignment and adaptation internally. If emerging the regulation properly into sourcing decision, it could be to the case company's advantage.

The case of Volvo CE shows a proactive stance to sustainability, through internal forces such as top management commitment, measuring of activities for sustainability, sustainability integrated in the overall and the procurement strategy as well as continuous improvements. The case company shows an active approach to the topic through its strong internal engagement for sustainability through supplier scorecards, lifecycle assessments and supplier and employee training. This highlights how internal drivers can align with normative and coercive external pressure and thereby reach innovation.

CBAM both hinders and drive competitiveness and innovation. The regulations contribute with challenges and additional costs which may be a disadvantage compared to global competitors. On the other hand, the regulation provides a more holistic approach in sourcing decisions since integration of it gives another output to the most beneficial sourcing option, looking at the counterweight as a case example. This example shows a way to work with the regulation and to drive innovation towards long-term competitiveness, since the change of the design of the counterweight may enhance the resilience of the supply chain in a sustainable manner. The holistic approach of including shadow price for Co2, end of life value and CBAM taxes can create a higher value for the end customer and be more beneficial for the planet.

The effectiveness of the regulation depends on the company's reaction to it, whether it is reactive or proactive. The company has a long history of working with improvements and sustainability and with further development of measurements for Co2 levels of imported parts, the firm stands a chance to proactively integrate the legislation in sourcing decisions and thereby possibly reach long-term sustainable competitiveness.

## 6.1 Limitations and Future Research

This study offers valuable insights to the effects of CBAM on a manufacturing company's supply chain and procurement strategy, but limitations can be identified. Firstly, Volvo CE is a large company with several years of experience in working with sustainability. The findings are challenging to apply to SMEs or other industries since this study explores the effects in the construction equipment industry. Secondly, the case example in the study explores one heavy component. Since the price of the CBAM certificate is based on the weight and the Co2 emissions released in the production of it, exploring CBAM's effect on different components may give a more accurate representation of whether the regulation is important to take into consideration in all sourcing decisions. Furthermore, the research draws on sustainable supply chain management theory and transaction cost theory to better understand the additional transaction costs that comes with regulations and to explore the complexity behind a sourcing decision. Theories like Porters hypothesis or stakeholder theory may give more a more nuanced answer to whether the regulation drive or hinder competitiveness and innovation.

Future research could explore the effects of CBAM when the regulation has been implemented, and the certificates have been put on the market. Future research could also explore the magnitude of environmental regulations that have been implemented during the recent years, to give a holistic perspective of the challenges that the multiple regulations give companies.

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# Popular science summary

As climate change increases, more EU regulations are implemented to lower the emissions and companies are forced to adapt. One of these new EU regulations is the Carbon Border Adjustment Mechanism (CBAM), a carbon tax for importing goods into the EU. Through a case study at Volvo Construction Equipment – this thesis explores how the regulation affects a manufacturing company's supply chain, competitiveness and innovation.

The research was made through interviews with employees at Volvo who works with sustainability, supply chain management or regulations. The study examines how the regulations influences both strategic decisions as well as day-to-day activities within the company. To understand this better, an example of a component imported at Volvo CE is analysed to understand the regulation's financial and environmental impact in a sourcing decision.

To better grasp the effects of the regulation, the study explores the reactions through the lens of scientific theories of supply chain management and transaction cost theory. CBAM can increase the cost and complexity of companies operating in the EU, but at the same time there are opportunities to reach for to increase competitiveness and drive innovation. The result of the study indicates that the effect of the regulation depends mainly on the company's approach, whether it is proactive or reactive. With a proactive approach, the company can integrate regulations like this into the sourcing decision to be prepared for the effect before it occurs.

If handled strategically, CBAM can drive innovation by pushing companies to rethink the design of products, strengthen supplier relationships and drive sustainability activities. This means that the environmental regulation of CBAM can be a catalyst for innovative, greener business.

# Appendix 1 – Sustainability

## *Interview guide*

***Introduction and background***

1. What's your role within this company?
2. How long have you had this position? How long have you been with the company?
3. Can you give some examples of what you do during a normal Workday?
4. What is sustainability to you?
5. How many suppliers are you working with?

***Education and motivation***

6. Have you received any training in sustainability? In what area of sustainability? internally/externally?
7. What connections do you see between sustainable development and the work you do with suppliers?
8. Do you feel motivated and/or interested in working with sustainability issues towards suppliers?
9. Is there something that would increase your commitment to these types of issue? what would that be?

***Commodity***

10. What criterias are evaluated when sourcing a new supplier?
11. Is sustainability a part of the selection of the supplier? In what sense? (socially, environmentally)
12. Is there a collaboration with the logistics function when sourcing a supplier? (in regards to transport distance, transportation type etc)
13. What are the most common challenges you face in your work?

***Commodity and sustainability***

14. What are the most common challenges connected to sustainability that you've come across?
15. Has the work with/attitude towards sustainability changed during your years as a commodity buyer? during your years within the company? in what way?
16. Do you see a connection between your work and the sustainability goals/SBTi of Volvo group? In what way?
17. How would you describe your suppliers' relationship to sustainability?
17. What sustainability requirements does Volvo have on its suppliers?
18. Who is responsible for ensuring that suppliers follow these requirements?

# Appendix 2 – CBAM

***Introduktion och bakgrund***

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1. Vad innebär din roll inom företaget?

2. Hur länge har du haft denna roll inom företaget? Hur länge har du jobbat på Volvo? Vilka tidigare roller har du haft?

3. Vilka är dina arbetsuppgifter?

4. Vilka andra roller inom Volvo samarbetar du med inom din tjänst? inom vilka områden?

5. Vad betyder hållbarhet för dig?

***Hållbarhet***

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6. Vilka är de vanligaste utmaningarna kopplat till hållbarhet inom ditt arbete?

7. Ser du någon koppling mellan ditt arbete och Volvo CEs hållbarhetsmål/science based targets? (net zero value chain till 2040, halvera utsläppen från vår egna produktion, 30% minskning i absoluta utsläpp) Vilken?

***CBAM***

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8. Hur har hållbarhet förändrat ditt arbete de senaste 10 åren?

9. Hur förbereder sig Volvo CE för CBAM?

10. Vilka utmaningar finns i att anpassa sig efter denna nya reglering?

11. Hur påverkar CBAM våra leverantörskedjor?

12. Har CBAM medfört någon förändring inom organisationen hittills som du känner till?

13. Hur ser processen ut för att integrera nya lagkrav i ditt/ert arbete?

14. Finns något exempel från tidigare där nya lagar satt käppar i hjulet för vårt arbete? på vilket vis?

15. Hur påverkar USAs tullar vår supply chain i dagsläget? Vilka åtgärder tas för att motverka detta?

16. Vilka roller samverkar för att möta nya lagkrav?

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