



## **SUSTAINABLE SUPPLY CHAIN MANAGEMENT**

### **PRACTICES TO ENSURE SUSTAINABILITY BASED ON ANNUAL REPORTS**

Lappeenranta–Lahti University of Technology LUT

Master's Programme in Supply Management, Master's Thesis

2022

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# **ABSTRACT**

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## **Sustainable supply chain management – practices to ensure sustainability based on annual reports**

Master's thesis

2022

76 pages, 6 figures and 10 tables

Examiners: Professor Katrina Lintukangas and University Lecturer Sirpa Multaharju

**Keywords:** Sustainable supply chain management, SSCM, practices, supply chain management, triple bottom line, TBL, corporate social responsibility

Although the concept of sustainable supply chain management (SSCM) is relatively young, interest in it as an enabler of sustainable business and competitive advantage has grown strongly. The goal of this master's thesis is to find out how a company can ensure sustainability of its supply chain. The aim is to answer the question by looking for sustainability practices related to supply chain. According to the triple bottom line theory, practices can be divided into economic, environmental, and social categories. The empirical part was conducted as a qualitative case study where six public companies were selected based on their historical ranking in the Global 100 sustainability index over the last ten years (2013-2022). By studying the annual reports of the selected companies, the aim was to identify the sustainability practices enabling a sustainable supply chain.

The results obtained from this study show that a company can ensure sustainability of its supply chain by utilizing industry-specific sustainability practices. On the other hand, the study also identified several industry-independent practices. Collaboration with stakeholders, code of conduct documents, recycling, supporting local communities, and evaluations appeared in all the annual reports examined. The research also revealed that the categorization of practices according to the triple bottom line theory is not always appropriate, as in many cases the exact definition of a practice into a certain category is challenging or even impossible.

# TIIVISTELMÄ

Lappeenrannan–Lahden teknillinen yliopisto LUT

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Kauppätieteet

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## **Vastuullinen toimitusketjun hallinta – käytänteet vastuullisuuden varmistamiseksi vuosikertomusten perusteella**

Pro gradu -tutkielma

2022

76 sivua, 6 kuviota ja 10 taulukkoa

Tarkastajat: professori Katrina Lintukangas ja yliopistoluentoitsija Sirpa Multaharju

Avainsanat: Vastuullinen toimitusketjun hallinta, SSCM, käytänteet, toimitusketjun hallinta, triple bottom line, TBL, yhteiskuntavastuu

Vaikka käsitteenä vastuullinen toimitusketjun hallinta (SSCM) on verrattain nuori, on kiinnostus sitä kohtaan vastuullisen liiketoiminnan ja kilpailuedun mahdollistajan kasvanut voimakkaasti. Tämän pro gradun tavoitteena on selvittää, miten yritys voi varmistaa toimitusketjunsä vastuullisuuden. Kysymykseen pyritään vastaamaan etsimällä toimitusketjuun liittyviä kestävyyskäytänteitä. Triple bottom line -teorian mukaan käytänteet voidaan jakaa taloudellisiin, ympäristöllisiin, ja sosiaalisiin luokkiin. Tutkimus toteutettiin kvalitatiivisena tapaustutkimuksena, johon valittiin kuusi julkista yritystä perustuen niiden historiallisiin sijoitukseen Global 100 -vastuullisuusindeksissä viimeisen kymmenen vuoden aikana (2013–2022). Valittujen yritysten vuosikertomuksia tutkimalla pyrittiin tunnistamaan niiden hyödyntämiä kestävyyskäytänteitä, jotka mahdollistavat vastuullisen toimitusketjun.

Tästä tutkimuksesta saadut tulokset osoittavat, että yritys voi varmistaa toimitusketjunsä vastuullisuuden hyödyntämällä toimialakohtaisia kestävyyskäytänteitä. Toisaalta tutkimus tunnisti myös useita toimialariippumattomia käytänteitä. Yhteistyö sidosryhmien kanssa, code of conduct asiakirjat, kierrätys, paikallisten yhteisöjen tukeminen, sekä erilaiset arvioinnit esiintyivät kaikissa tutkituissa vuosikertomuksissa. Tutkimuksessa kävi myös ilmi, että käytänteiden kategorisointi triple bottom line -teorian mukaan ei ole aina tarkoituksenmukaista, sillä useassa tapauksessa käytänteen tarkka määrittely tiettyyn kategoriaan on haastavaa tai jopa mahdotonta.

## **ACKNOWLEDGEMENTS**

Graduating from LUT University feels like an incredibly great achievement. I will forever remember the moment when I received the letter about the degree place in the master's programme offered to me. It definitely turned a new page in my life, supported by my decision to move to Lappeenranta. Since then, I have not regretted the decision I made even for a moment. In Lappeenranta, I met my girlfriend, made a bunch of wonderful friends, and got unforgettable memories.

In addition to the above, I would also like to thank my family, my other friends, and my supervisors Sirpa Multaharju and Katrina Lintukangas for their great support during this thesis process. However, I want to dedicate this thesis, especially to my father, without whom I would not have made it this far. Isä, kiitos kaikesta.

Espoo 14.8.2022

Tomi Salmimaa

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# 1. INTRODUCTION

Studying at LUT University has provoked my interest towards sustainable business - my master's studies have dealt with sustainability issues from different perspectives. Personally, I find sustainable supply chain management a particularly interesting research topic. The topic is also important to humankind, as the trend of this millennium has been the expansion of global goods flow. National borders are not a barrier as international corporations optimize their supply chains around the globe to maximize efficiency. This leads to a particular need to look after the sustainability part of supply chains – what practices can ensure sustainability?

## 1.1. Background

As a concept, sustainable supply chain management (SSCM) is still quite fresh. It can be defined as “The management of material, information, and capital flows, as well as cooperation among companies along the supply chain, while taking goals from all three dimensions of sustainable development into account”. (Meixell & Luoma, 2015, 70.) However, as an important enabler of sustainable business, interest in it has grown exponentially. In supply chain related studies, economic and environmental aspects have been by far most studied. But still, this research has only started to emerge no earlier than 2002. (Miemczyk & Luzzini 2019; Zailani, Suhaiza, Jeyaraman, Vengadasan & Premkumar 2012.)

As globalization, population growth, and the rapid development of third world economies are strong megatrends, there is increasing pressure on the efficient use of existing resources. By acting unsustainably, especially manufacturing companies might cause huge amounts of waste, pollution and even threaten the existence of life on Earth. Increased transparency and the free flow of information ensure that possible defects in the supply chain come to the fore. This forces companies to take the environmental impact of their business seriously if they want to remain competitive in the global market. (Meixell & Luoma 2015; Zailani et al. 2012.)

Social sustainability basically means the way a company manages the health, safety, and well-being of its workforce within its supply chain (Khan, Mubarik, Kusi-Sarpong, Zaman & Kazmi 2020). In an extremely competitive business environment, suppliers are tempting buying firms by offering as attractive contracts as possible. In particular, suppliers who are operating in low-regulated business environments might have a temptation to abuse their workforce in order to provide lower costs, better order flexibility, and lower lead times. Child labor, forced labor, and neglect of health and safety issues can even be called modern time slavery. In 2017, International Labour Organization (ILO) released a report that claims there are approximately 152 million child workers and 24,9 million forced workers worldwide. (Alghababsheh & Gallear 2020.)

Organizations can proceed with their environmental and social responsibility goals without compromising financial performance. On the contrary, progress in them has a positive effect on financial performance and even provides a competitive advantage. (Winter & Knemeyer 2013.) Traditionally, competitive advantage has been associated with value creation and can be achieved by cost or differentiation strategies. But the most recent studies have emphasized that competitiveness is related to a company's resources and capabilities, which are developed through corporate social responsibility (CSR) practices. In addition, environmental management practices can also lead to innovations that lead to competitive advantages. (Cantele & Zardini 2018.) Thus, the company's long-term success and competitiveness are the foundation of financial sustainability. Unlike the social and environmental dimensions, the economic dimension is primarily quantitative while focusing on utilizing the available resources and maximizing return on investment (Winter & Knemeyer 2013.)

The pressure from media and non-governmental organizations (NGOs) is accelerating companies to develop their operations from a sustainable point of view. This pressure flows down the supply chain as companies' suppliers are expected to meet the requirements set. The biggest pressure is on large Western companies that have outsourced production to low-cost developing countries and have at least partly ignored social and environmental issues to maximize short-term economic performance (Zailani et al. 2012). In addition, most companies are experiencing internal and external pressure from stakeholders. As an

example, such stakeholders can be employees or customers. They can also regulate public opinion and even have a strong and positive effect on a competitive advantage. (Meixell & Luoma 2015; Winter & Knemeyer 2013.)

Sustainable development was defined by the United Nations report on sustainable development in 1987. (Meixell & Luoma 2015; Varsei & Polyakovskiy 2017.) The report known as the Brundtland Report defined sustainable development as the “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. (WCED 1987). Following the publication of the report, the importance of sustainable development and the integration of environmental and social considerations alongside economic performance has been emphasized. Supply chain is a single component through which a sustainable business model manifests itself. Triple bottom line (TBL) was made popular by John Elkington in 1999. TBL goes beyond financial performance by including also environmental and social sustainability equity. This view has been widely adopted when measuring the sustainability of supply chains. (Meixell & Luoma 2015; Miemczyk & Luzzini 2019.)

The business and research have highlighted TBL based approach, but recently CSR has gained increasing attention. The idea of CSR is that companies should not just maximize profits but meet certain ethical standards on socially desirable behavior. Therefore, it is a combination of an organization’s economic, social, political, and environmental responsibilities. In SSCM related research, economic and environmental-based approaches are by far the most studied which emphasize the importance of CSR research. As the research of CSR practices in supply chain management (SCM) is fairly limited, interest in it is growing with research focusing on the CSR practices and activities of large companies’ supply chains. (Airike, Rotter & Mark-Herbert 2016; Lee, Kwak & Park 2017.)

## 1.2. Research objectives and questions

This thesis aims to study what enables companies to have sustainability in their supply chains by examining geographically and industrially dispersed set of companies that have been historically successful in an international sustainability ranking.

The main research question is:

***How can a company ensure the sustainability of its supply chain?***

The sub-questions are:

- 1) *What are the practices that companies use to ensure the sustainability in their supply chain?*
- 2) *According to the annual reports, what practices are applied in SSCM from an environmental point of view?*
- 3) *According to the annual reports, what practices are applied in SSCM from a social point of view?*

The main research question is “How can a company ensure the sustainability of its supply chain?”. Three sub-questions have been formed to support the main research question. The first sub-question seeks to find out what practices companies use to ensure sustainability in their supply chain. The answer to the first sub-question is not solely based on the annual reports, but also on the theoretical part of this study. The aim of the second sub-question is to find out what practices are applied in SSCM from an environmental point of view and the aim of the third sub-question is to find out what practices are applied in SSCM from a social point of view. Both of these sub-questions utilize the annual reports used in the study.

### 1.3. Research methodology

A qualitative research method was chosen for the empirical part of this thesis. The qualitative research method was chosen because the goal is to understand the enablers of a sustainable supply chain by studying annual reports. According to Eriksson & Kovalainen (2008) qualitative business research allows the researcher to focus on complex business-related phenomena in their context. It provides new insights into how and why things work in a real-life business context, whereupon understanding them may even lead to a change. While quantitative research is the dominant form of research in business research, qualitative research and its characteristics are often described in relation to it. In fact, the precise definition of qualitative and quantitative research is very challenging as there is a lot of

variation in their sub methods. Instead of defining them, comparing them with each other is often more meaningful.

In a qualitative research, the size of the research material is not relevant, but rather the quality of it. The aim is that the research material serves as an aid in understanding a thing or phenomenon or in forming a theoretically meaningful interpretation. This goal can be achieved with even a small amount of research data if the data analysis is done thoroughly. Thus, an appropriate question for a qualitative research method would be “what kind of research material provides a comprehensive description of the research problem”. Before collecting the research material, the selection criteria on the basis of which the research material is compiled are decided based on the research problem and the objectives of the research. However, the researcher(s) has to take a stand and reason the functionality of the selection criteria in the research text. The research material can be delimited as precisely as possible with a view to the theoretical coverage of the research. (Vilkka 2021.)

This thesis utilizes the case study method. The aim is to examine a geographically and industrially dispersed group of companies that have been historically successful in international sustainability ranking. While it may reveal large differences between companies, the case study method allows them to be studied as separate entities. According to Eriksson & Kovalainen (2008) case study method has a long history in academic research. In addition to enabling diversity and complexity, the aim of the case study is to present challenging business questions in a more comprehensible form. A key feature of a case study is the construction of the case(s). More precisely, research questions are always connected to understanding and resolving cases. The aim is to understand what the case is about and what can be learned by examining the case in relation to its context. Kähkönen (2011) points out that a case study as a research strategy for qualitative research is particularly well suited to approaching different parts of the supply chain, as it allows direct observations to be made. In addition, case studies have been widely considered valuable and useful in SCM research.

#### 1.4. Limitations

This thesis is limited to considering the sustainability of companies' supply chains and it does not solely consider the sustainability efforts of the companies themselves. Also, the

thesis is focusing mainly on the upstream supply chain and supplier sustainability practices. The empirical part is limited to considering public companies with annual purchasing power parity revenue of more than US\$2 billion. Purchasing power parity revenue limitation ensure that selected companies are significant enough and guide to select companies that possess a sufficiently large supply chain. Only public companies will be selected for the study because their disclosure obligations are broader compared to private companies.

The aim is to examine geographically and industrially dispersed set of companies that have been historically successfully in an international sustainability ranking. Therefore, the aim is to select companies that represent different continents and industries. Nevertheless, Africa, Australia, Antarctica, and South America are excluded from the study as from there it would be difficult or even impossible to find companies that would be suitable for this study. Companies that do not possess a sufficiently large supply chain due to their industry are also excluded as it would not make sense to examine their supply chains for this study.

After careful consideration, a decision was made to exclude the economic point of view when assessing practices that are applied in annual reports. Based on the TBL concept, the economic perspective is an integral part of sustainability. However, the research data used in this study would most likely provide only incomplete and weak information about it. Thus, it is better to focus the resources available on the other two dimensions of the TBL, environmental and social, when assessing practices that are applied in SSCM.

### 1.5. Conceptual framework

Figure 1 presents the conceptual framework of this thesis. All is based on corporate social responsibility which is the basis for the triple bottom line framework and economic, environmental, and social dimensions of it. In this thesis, empirical data will be examined from environmental and social view. Traditional supply chain management is based mostly on the economic dimension, but further refined sustainable supply chain management and its practices take into account all three dimensions of the triple bottom line. Sustainable supply chain management practices can be described as continuous activities, which are in this thesis divided into economic, environmental, and social aspects according to the triple

bottom line framework. By adopting these practices, companies can achieve the ultimate goal, of having a sustainable supply chain.

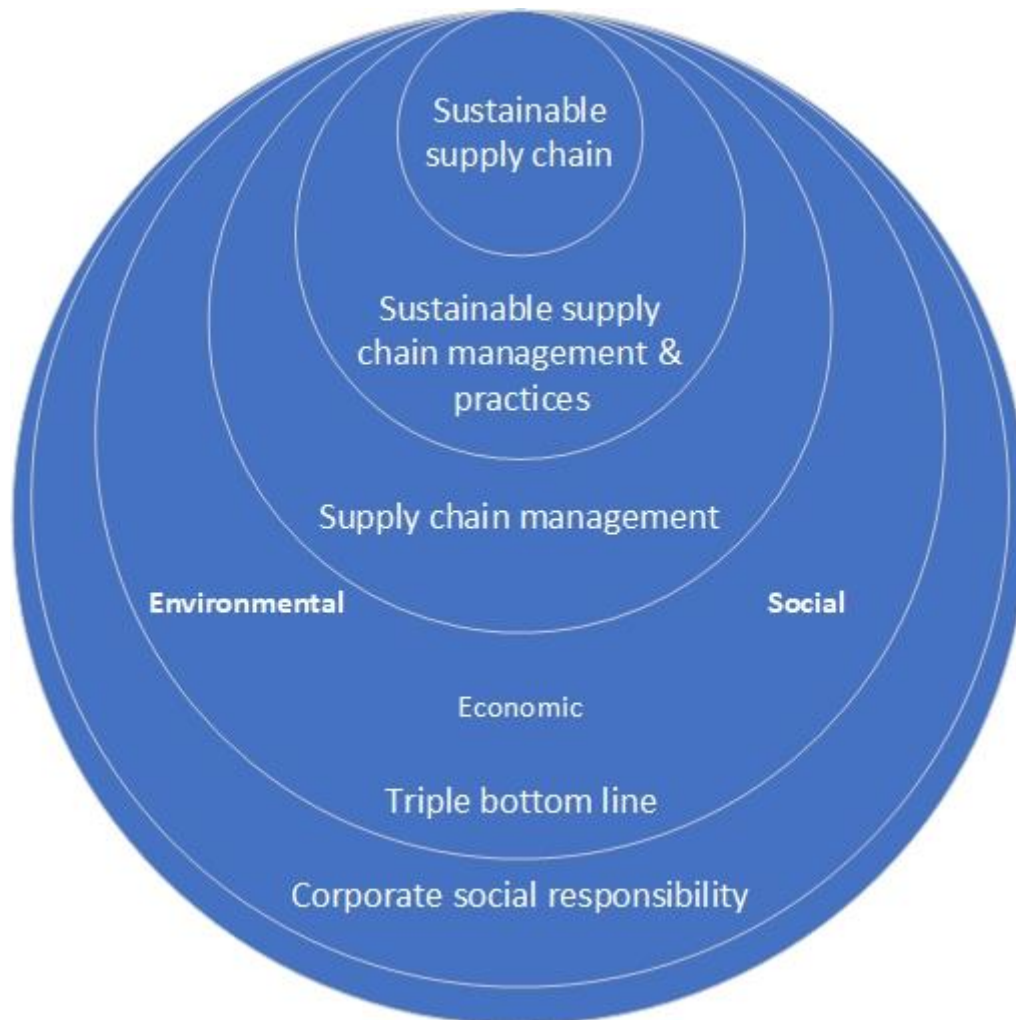


Figure 1. Conceptual framework

According to Li (2020) the introduction of CSR practices has been found to have a direct positive impact on the supply chain performance, the public image of a company, and long-term financial position. Srivastava, Dixit & Srivastava (2021) describe CSR as the basis for the TBL framework while Carter & Rogers (2008) suggest that the combination of TBL dimensions should result in sustainability. Beske & Seuring (2014) argue that from a TBL point of view, SCM is focused on the economic dimension and SSCM is a theoretical and practical extension of it. Baliga, Raut & Kamble (2019) state that the adoption of the whole TBL approach is one of the key factors in implementing SSCM. Narimissa, Kangarani-Farahani & Molla-Alizadeh-Zavardehi (2020) highlight the importance of sustainability

practices related to the supply chain in a developing company's economic, environmental, and social performance. Beske & Seuring (2014) conclude that companies that pursue sustainability while doing business, follow certain sustainability practices in SCM. In their study, Zailani et al. (2012) found empirical evidence that reveals the positive impact of SSCM practices on sustainable supply chain performance.

#### 1.6. Key concepts

**Corporate social responsibility (CSR)** is a term used to describe the stakeholder-driven behavior of companies that, in addition to maximizing profit, considers actions that improve the well-being of other stakeholders. For instance, providing employee benefits, respecting the environment, selecting suppliers that do not use child labor, and participating in charitable campaigns. Thus, CSR is a combination of an organization's economic, social, political, and environmental responsibilities. (Airike, et al. 2016; Liang & Renneboog 2017.)

**Supply chain management (SCM)** is “the systemic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole” (Mentzer, DeWitt, Keebler, Min, Nix, Smith & Zacharia 2001, 18).

**Sustainable supply chain management (SSCM)** is “the management of material, information and capital flows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e. economic, environmental and social, into account which are derived from customer and stakeholder requirements”. (Seuring & Müller 2008, 1700)

**Sustainable supply chain management practices (SSCM practices)** are practices that improve a company's supply chain sustainability performance in economic, environmental, and social dimensions. For example, practices leading to a reduction in pollution and greenhouse gas emissions can be considered as actions that improve environmental performance. (Le, Nguyen & Cheng 2021; Luthra & Mangla 2018.)

**Triple bottom line (TBL)** is a framework that considers dimensions of economic, environmental, and social performance (also commonly called 3P: people, planet, and profits). The TBL differs from traditional reporting frameworks as in addition to economic performance it also involves environmental and social dimensions. John Elkington developed the TBL during the mid-1990s to create a new framework to measure sustainability and performance of corporate America and made it popular in his book “Cannibals with Forks: The Triple Bottom Line of 21<sup>st</sup> Century Business” in 1999. (Meixell & Luoma 2015; Slaper & Hall 2011.)

### 1.7. Structure

This thesis consists of six different main chapters. The first chapter, introduction, begins by briefly justifying the importance of the research with the help of the previous literature. It is followed by the introduction of research objectives and research questions. Research methodology is also mainly presented. Limitations explain how and why the research has been limited. It is followed by the conceptual framework and the key concepts appearing in this thesis.

The second main chapter deals extensively with the theory on which this thesis is based on. The focus is on sustainable supply chain, triple bottom line theory, and sustainability practices. The third main chapter is methodology, which goes into more detail about the research and how it was carried out as a whole. It is followed by the fourth main chapter called empirical part, which examines the sustainability practices of six companies based on their annual reports. In the fifth main chapter, discussion, the findings are discussed and compared to the previous literature. The thesis ends with the sixth chapter’s conclusions, in which the main purpose is to answer the set research questions, but also to consider limitations and future research suggestions.

## 2. SUSTAINABLE SUPPLY CHAIN MANAGEMENT

The sustainability of organizations and supply chains has become a topical issue. This is the result of the general view that companies are responsible for their own and the entire supply chain functions affecting the environment, society, and the economy. In the face of change, both internal and external stakeholders are putting pressure on organizations. (Saeed & Kersten 2019.) Previous studies have also found that sustainable supply chain management practices (SSCM practices) have a positive impact on a company's performance, including financial performance. This is a proof that sustainable practices can also create value for a company and its shareholders, which is an important driver for more sustainable operations. (Zailani et al. 2012.)

### 2.1. How to define sustainability

One of the best-known definitions of sustainability was published by United Nations' sub-organization called World Commission on Environment and Development (WCED) in its report on sustainable development in 1987 (Meixell & Luoma 2015; Varsei & Polyakovskiy 2017). The report better known as the Brundtland Report after its chairperson, defines sustainability as:

“development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” (WCED 1987).

The report aimed to draw global attention to intergenerational equality by balancing the needs of the current generation. The concept of sustainability is originally from the 18<sup>th</sup> century and well-known economists such as François Quesnay, Thomas Malthus, and Adam Smith are being associated with it. Some of their concerns are still relevant and are also represented in the Brundtland Report, such as environmental limits, water security, inequality, and population growth. As an example, in 1798 Malthus published a theory concerning mass starvation if the agricultural capacity would not be enough to feed the growing population. (Kuhlman & Farrington 2010; Varsei & Polyakovskiy 2017.)

Thus, the Brundtland Report endorsed the concept of sustainable development and did the groundwork for the broad recognition the term enjoys today. It discusses two concerns that need to be reconciled: development and the environment. However, over time the concept of sustainability has evolved, and it is very often said to cover three dimensions: social, economic, and environmental. (Kuhlman & Farrington 2010.) This is also reflected in the definition of development accepted by the United Nations in its Agenda for Development:

“Development is one of the main priorities of the United Nations. Development is a multidimensional undertaking to achieve a higher quality of life for all people. Economic development, social development and environmental protection are interdependent and mutually reinforcing components of sustainable development.” (United Nations 1997, 1-2.)

#### 2.1.1. Corporate social responsibility

Corporate social responsibility (CSR) is a term that combines an organization’s economic, social, political, and environmental responsibilities and is used to describe the stakeholder-driven behaviour of companies that, in addition to maximizing profit, emphasize actions that improve the well-being of other stakeholders (Airike, et al. 2016; Liang & Renneboog 2017). The implementation of CSR into the supply chain is very crucial in this respect and has also been found to have a direct positive impact on supply chain performance, the public image of a company, and financial position in the long run. On the other hand, the short-term negative effect may be increased costs. (Li 2020)

The concept originally presented by Bowen & Johnson in 1953 is thus based on the idea that a company should not generate value only for its shareholders, but for all stakeholders instead. The idea was based on the belief that the largest corporations in the United States exercise significant power, and thus their actions greatly affect the lives of citizens. Perhaps nowadays the best-known model of CSR is probably the CSR pyramid published by Archie B. Carroll in 1991 which is based on the four-part definition of CSR published in 1979 by the same author. The aim of the pyramid, which is displayed in Figure 2, is to separate the definition part of CSR and to illustrate it with a pyramid divided into four parts. The whole pyramid is based on sustainable profitability, which is the basis for society’s other expectations of the company. Thus, corporate social responsibility is based on financially

viable business and is built in a way that mirrors what are and what should be fundamental roles by businesses in society. (Carroll 2016; Modak, Sinha, Raj, Panda, Merigó & Lopes de Sousa Jabbour 2020.)

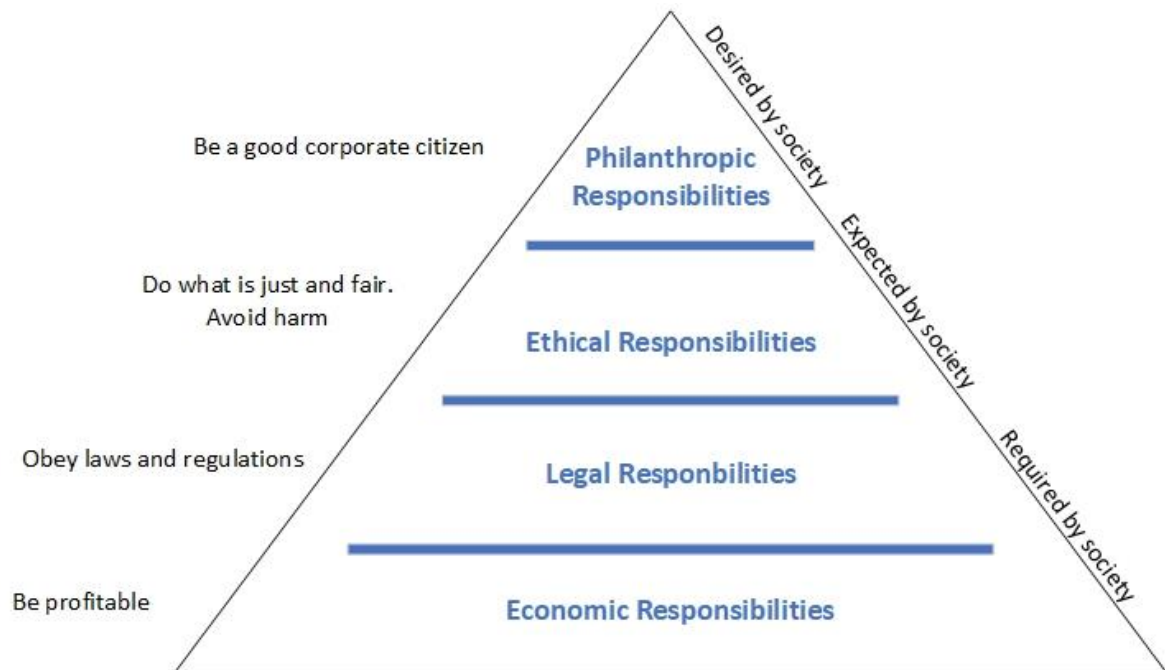


Figure 2. Carroll's Pyramid of CSR (Carroll 2016)

Modak et al. (2020) note that several multinational corporations (MNC) have taken various measures to emphasize the implementation of CSR in their supply chains. As an example, Swedish-founded furniture chain Ikea has allocated huge amounts of money to produce clean electricity for one million people living in India and East-Africa region while US-based clothing company Abercrombie & Fitch has spent approximately \$15 million to help children suffering from serious illnesses. Similar actions have been taken by companies such as Bosch and Tata Steel. Thus, MNCs have begun to integrate CSR into their supply chains to ensure long-term sustainability.

From a supply chain perspective, the irresponsible behavior of any company within the supply chain can cause difficulties for the entire supply chain (Li 2020; Liu, Wei, Choi & Yan 2022). The grown popularity of outsourcing has made supply chains more complex and multi-tiered which has posed a major challenge for companies in managing CSR throughout

the supply chain. In a typical multi-tier supply chain, Tier 1 supplier acts as the buying company's primary supplier. However, Tier 1 uses a Tier 2 supplier as its supplier. A multi-tier supply chain is illustrated in Figure 3. According to a study published in 2013, CSR violations are 18% more common in Tier 2 than in Tier 1. In addition, significant and critical incidents occur more frequently in Tier 2 than in Tier 1. For example, in 2011, more than 100 employees were exposed to a toxic chemical during the production process at a production facility owned by a Chinese Tier 2 supplier. As a result, 36 Chinese NGOs started boycotting Apple's products. Since then, some MNCs have begun stricter in their CSR management towards Tier 2 suppliers. (Liu et al. 2022.)

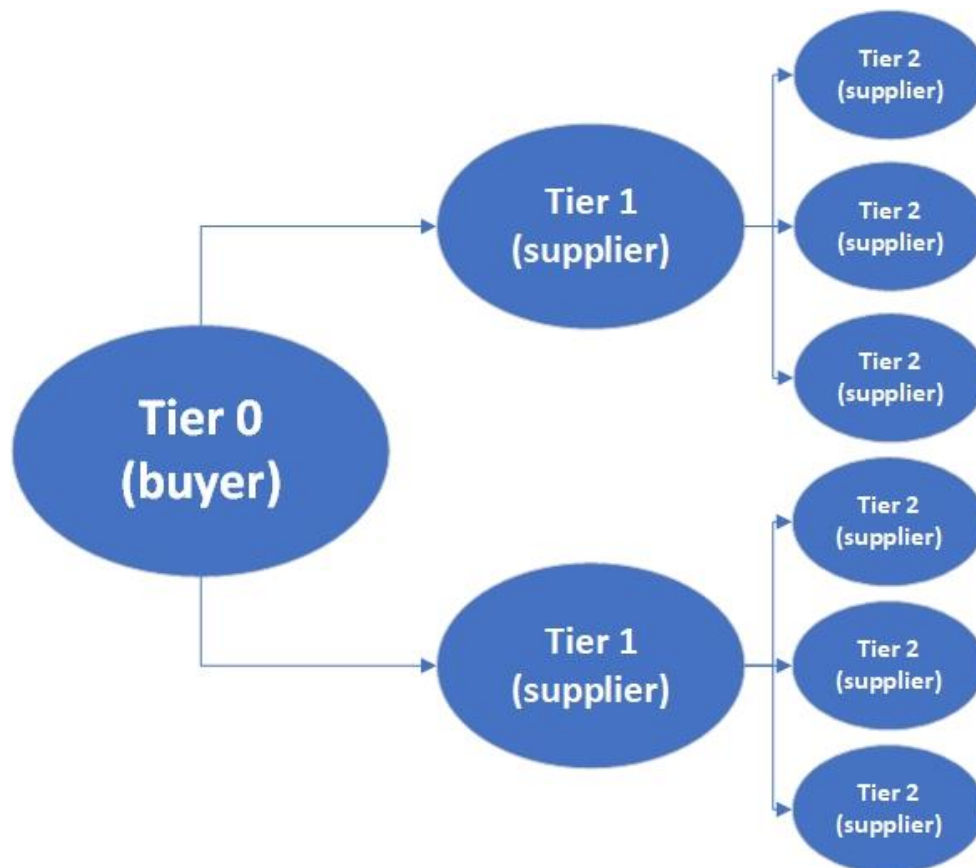


Figure 3. An example of a multi-tier supply chain (Liu et al. 2022)

### 2.1.2. Triple bottom line

The triple bottom line (TBL) is a framework that considers three dimensions: economic, environmental, and social. It was made popular by John Elkington in 1999. (Meixell &

Luoma 2015.) TBL has its roots in CSR, and it can be described as a platform that guides companies to behave like citizens do (Srivastava et al. 2021). According to Hubbard (2009) TBL adds social and environmental performance metrics in addition to the economic metrics typically used in most organizations. It is based on stakeholder theory and identifies a wide range of stakeholders that the organization influences. More precisely, a company's performance should not be measured solely based on the stakeholders with whom a company has direct transactions (e.g. employees, suppliers, and customers) but instead include also indirect stakeholders (e.g. local communities and governments).

TBL is often used to measure sustainable development and has been also widely adopted for measuring sustainability in supply chains (Miemczyk & Luzzini 2019). It suggests that a combination of social, environmental, and economic performance leads to sustainability (modelled in Figure 4) but also economic benefits and better competitiveness of a company. However, organizations are having difficulties in implementing especially social dimension of sustainability as there is only little guidance on how to identify current and future needs, technologies and resources needed, and balance organizational responsibilities between stakeholders such as shareholders, employees, other organizations in the supply chain, and wider stakeholders (e.g. societies). (Carter & Rogers 2008.)

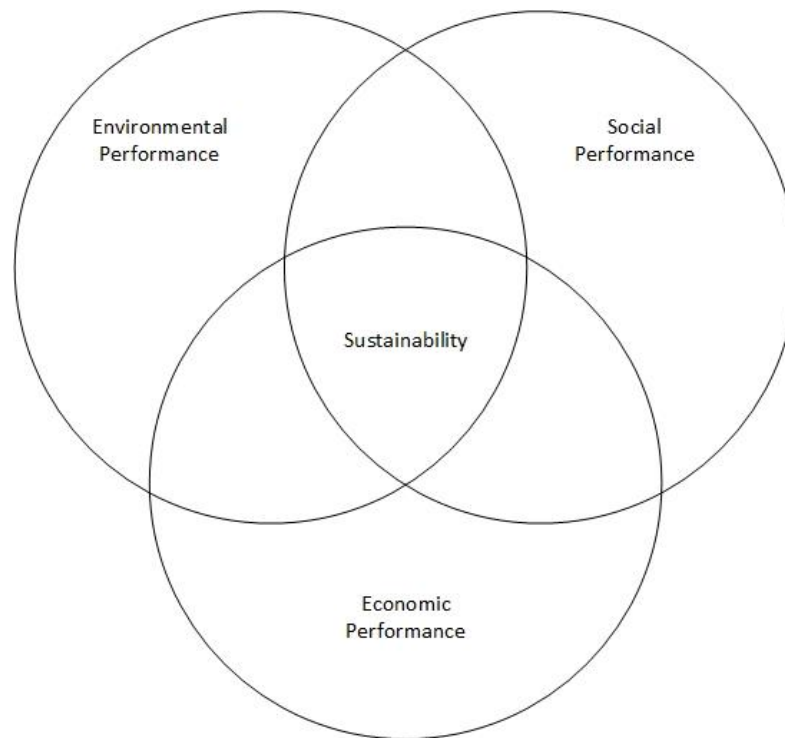


Figure 4. Sustainability: the TBL (Carter & Rogers 2008)

As capitalism is a widely applied economic system, companies as a vital part of it must bear the responsibility of chasing sustainability. The assumptions are that failing in it would be against the self-interest of companies and the wealth and power of companies will lead to the innovation of new technologies and procedures that are necessary to achieve sustainable development. The above assumptions are the basis for a call for wider deployment of the TBL reporting. (Mitchell, Curtis & Davidson 2012.)

On the other hand, critics have claimed that there is no sense in chasing full sustainability in organizational surface as sustainability can be described as a world-wide concept. At best, companies' reports are only stories of how they would like to understand sustainability and have everyone else embrace it. The TBL reporting should be considered a desirable development if those reports include credible and completely verifiable environmental and social reports revealing inconsistencies and trade-offs regarding the organization's environmental and social liabilities and monetary requirements. (Mitchell et al. 2012.) Srivastava et al. (2021) criticize TBL for not being a unique or innovative concept, but rather being an explainer of the pre-existing CSR concept and a sustainability measurement tool.

Kuhlman & Farrington (2010) believe that the development of sustainability as a concept has not been only positive as it conceals the contradiction between long-term sustainability and short-term well-being. Moreover, the difference between the three dimensions is conceptually blurry. They propose that the definition of sustainability should be redefined in the way it was originally intended. The most sensible way would be to separate the current needs from the needs of future generations and therefore call the current needs well-being and the future needs sustainability. Well-being largely corresponds to the TBL's social and economic dimensions, while sustainability corresponds to the environmental dimension. That would be a more exact and versatile way to describe sustainability than the way it is commonly described today.

### 2.1.3. Sustainability practices

Sustainability practices related to the supply chain have an essential role in developing a company's economic, environmental, and social performance. Companies have begun to implement SSCM practices in their supply chains and even in their strategic planning, although it has been found to be slower than previously thought. (Narimissa et al. 2020.) SCM aims to bring products and services to market, emphasizing the full integration of value-creating functions across organizational boundaries. Practices vary depending on the industry, product type, and level of integration. (Hsu, Choon Tan & Laosirihongthong 2014; Mathivathanan, Mathiyazhagan, Noorul Haq & Kaippillil 2019.)

Environmental sustainability has been highlighted as a huge global challenge. The reputation of a company and its stakeholders are at stake if it is neglected. Therefore, the industry has begun to adopt SSCM practices to manage its environmental sustainability. Although the impact of the introduction of SSCM practices on financial performance has been extensively studied in developed economies, there are still uncertainties about the influence on the financial result in emerging economies, but the topic requires further research. (Esfahbodi, Zhang & Watson 2016.) Mathivathanan et al. (2019) remind that Asia is a continent that consists of many emerging economies, which have been at the forefront of manufacturing output in recent years. In India, for example, there is a critical debate on ecological issues, fueled by increased awareness, foreign investment, and government encouragement.

Manufacturing companies there have begun to adopt SSCM practices for the long-term benefit of the country.

Kähkönen, Lintukangas & Hallikas (2018, 526) discuss the categorization of SSM practices and divide them as follows:

1. “sustainability guidelines – including standardization, certification, and labelling – to ensure the regulation of activities;
2. reporting and formalization of the visibility of sustainability using external evaluators, writing CSR reports, using lists of sustainable suppliers and including CSR indicators for supplier performance measurement;
3. upstream supply chain management actions, such as supplier sustainability auditing and putting effort into the traceability of the origin of purchased materials and products; and
4. downstream supply chain actions that aim to enhance the transparency of the supply chain for the end-customer.”

#### *The economic dimension and practices*

Fortune 500 is a list maintained by a U.S.-based business magazine Fortune, that ranks companies registered and operating in the U.S. according to their total revenues for their respective fiscal years, while also looking at other business metrics (Fortune 2022). According to Wilson (2015) the average time for companies on the Fortune 500 list has declined significantly since the mid-20<sup>th</sup> century. In 1958 the average tenure for a company listed by Fortune 500 was 61 years, in 1980 25 years, and eventually in the 2010s only 18 years. One of the main reasons for this shortening of the average tenure on the list is increasing competition and creative destruction.

Efforts to reduce supply chain costs while balancing business with other strategic and sustainable development goals are called the economic dimension (Le et al. 2021). The goal of the economic dimension is to guarantee the financial viability of a company by using sustainable methods. This can be done by increasing revenue, market share, profitability,

return on equity (ROE), return on assets (ROA), and share price over a long period of time. (Faisal, Al-Esmael & Sharif 2017; Hubbard 2009.) Only little attention has been paid to research on the economic sustainability of companies, which is highlighted in research on the economic sustainability of supply chains. In addition, the current debate is often narrow-minded, focusing on certain aspects such as direct, product-related costs. Economic sustainability can be measured by “financial” and “non-financial” practices, while the discussion is mainly focused on financially measurable practices such as ROE or ROA. However, it is important to consider also non-financial practices as they are also economically valuable. Economic sustainability practices can be, for instance, employee retention, employee attraction, improved image, attraction of new customers, retention of existing customers, foreign direct investment, and improved profits. (Seuring & Sudusinghe 2020.)

In supplier selection, it is important to consider quality, reliability of supply, costs, and level of service. In addition to these traditional supplier selection criteria, fresher indicators from a sustainability perspective such as reduction of packaging waste, ability to improve product life, and ability to design for reuse and disassembly can be added. Suppliers must support the buying company in its efforts of bringing new products to the market. New products are usually equipped with lower-cost components that allow for better profitability. All the same, usually companies find themselves in a situation where compromises have to be made between quality, costs, reliability, lead time, and flexibility of the supplier. (Faisal et al. 2017.)

According to Isaksson & Steimle (2009) customer value could be a indicator of successful economic dimension when the benchmark is “a perfect product from a perfect process”. The costs for low quality (CPQ) are non-existent if products and processes are error-free. However, a high CPQ company can generate value for their shareholders if they manage to pass incurred costs to customers through overpricing. Based on this, value gained through sales is a crucial measure but it is not a holistic measure of financial sustainability. But still, in a perfect market, the company that produces the best customer value will increase its market share in a long period.

### *The environmental dimension and practices*

The environmental dimension in the supply chain context refers to the environmental impact of the supply chain, such as pollution, greenhouse gas emissions, and waste management (Le et al. 2021). Faisal et al. (2017) claim there is a positive correlation between a company's performance and environmental management. While doing business, a company and its supply chain consume certain resources and create by-products. These resources can be, for instance, energy, land, materials, and water. By-products usually refer to waste, air emissions, and chemical residues. Unlike the economic dimension, the environmental dimension is not easy to measure or compare as almost always individual indicators are needed based on organizational or industry level. (Hubbard 2009; Wilson 2015.)

Companies are also becoming more aware of the importance of the sustainable responsibility of their partners (Govindan, Khodaverdi & Jafarian 2013). An efficient SSCM reduces resource use by reuse, recycling, and proper waste management which also provides cost savings and improves financial results. Procurement is a crucial factor as it can consider alternative materials, find ways to reduce packaging waste, and ban materials that could cause a serious health hazard. However, this highlights the increased role of suppliers and supplier management as no company can steer its supply chain by acting alone. (Faisal et al. 2017.) Mathivathanan et al. (2019) consider environmental purchasing, standards and certifications, audits, and green packaging as supplier level practices. Environmentally friendly purchasing guarantees greener raw materials for production, while the use of renewable materials in packaging and regular audits of suppliers contributes to better environmental protection. ISO 14000 is a series of standards that guide the selection of sustainable suppliers.

Companies are keener to invest in voluntary-based environmental management and communication tools such as standardized environmental management system ISO 14001, life cycle assessments, eco-labeling of products, carbon dioxide emission projects, and sustainability reporting systems. Thus, a clear link can be observed between SSCM and environmental sustainability. (Govindan et al. 2013; Mathivathanan et al. 2019.) According to Vachon & Klassen (2006) environmental monitoring of suppliers includes the collection

and processing of supplier information using public environmental documents, company-specific questionnaires, and audits performed by the purchaser or a third party. There may also be requirements that suppliers must meet certain code of practices or standards. For instance, several large car manufacturers are demanding their tier-1 suppliers adopt the ISO 14001 standard. Suppliers are also required to comply with certain regulations, such as emission caps or labeling of hazardous materials, and an appropriate level of control over environmental documentation.

According to Miemczyk & Luzzini (2019) focusing on the environmental dimension is likely to lead to actions that emphasize collaboration with suppliers who operate within the supply chain which highlights the importance of suppliers in corporate sustainability efforts. The results can be innovations and better efficiency through product redesign, waste reduction, better recycling, or other ways to save costs and create greener products. Mathivathanan et al. (2019) classify long-term relationships and collaboration with suppliers as collaboration level practices. Collaboration with suppliers can include joint planning sessions regarding the environment, greener product design, and greener logistics processes. When collaborating with suppliers, it is important to note that instead of immediate results, the focus should be more on longer processes and the results will be achieved later. In addition to the above, reverse logistics, effective use of by-products, environmental awareness training, and cooperation with customers can be considered as environmental-related practices. (Mathivathanan et al. 2019; Vachon & Klassen 2006.)

#### *The social dimension and practices*

Social performance usually refers to the impact that a company or its supplier has on the communities through their operations. Like environmental performance, social performance is also challenging to quantify and compare due to company and industry-specific differences. (Hubbard 2009.) According to Le et al. (2021) the social dimension refers to different social questions such as legislation, health, security, and salaries. Suitable metrics for a social dimension are, for example, respect for human rights including child labor, product liability including customer health and safety, lost time injury frequency, security of supply, responsiveness, customer satisfaction, level of sponsorship, and level of training offered. (Hubbard 2009; Wilson 2015.)

Since the early 1990s, companies around the world have used code of conduct documents to list various requirements that a supplier must follow (Andersen & Skjoett-Larsen 2009). Miemczyk & Luzzini (2019) state that social performance can be taken into account by confirming that suppliers fulfill required social and ethical standards. This can be confirmed by conducting audits and via cooperation with stakeholders (NGOs or other interest groups). Suppliers may also be selected based on social performance standards such as ISO 26000 or arrangements such as fair trade or rules which concern working time restrictions or certain safety obligations. In addition to ISO 26000, Alghababsheh & Gallear (2020) mention SA8000 as a well-recognized certification.

To be socially sustainable requires a company to eliminate any non-compliance in any part of the supply chain. Thus, the whole supply chain must be noticed when considering the social dimension. By the Institute of Supply Chain Management, factors that directly affect social responsibility include diversity in the workforce and supply base, safety of workers, human rights, and community initiatives. Nevertheless, in addition to these basic social factors, there are also advanced practices, which can enable new business through their innovation. For instance, by deploying health and safety management systems, companies can improve their social performance on the supply chain level. Nowadays consumers appreciate sustainability and are willing to pay a premium for sustainably produced goods and services. However, it is a double-edged sword, and unsustainability will backfire on companies. (Faisal et al. 2017.)

Alghababsheh & Gallear (2020) discuss supplier collaboration as a SSCM practice. Supplier collaborations practices refer to buying company's intensive work with a supplier with the goal of improving supplier performance in the selected area. Supplier collaboration can also be utilized in terms of social sustainability, for example in product design, which improves employee well-being and creates a safer work environment. To achieve improvements, there are various tools and actions available for buying companies, such as supplier development and education programmes, mutual interaction routines, joint-meetings, sustainability-specific investments, and awarding suppliers' subsidies to obtain third-party certifications. Table 1 presents a wrap-up of all economic, environmental, and social SSCM practices mentioned in this chapter.

Table 1. A wrap-up of SSCM practices (Alghababsheh & Gallear 2020; Andersen & Skjoett-Larsen 2009; Faisal et al. 2017; Govindan et al. 2013; Hubbard 2009; Isaksson & Steimle 2009; Le et al. 2021; Mathivathanan et al. 2019; Miemczyk & Luzzini 2019; Seuring & Sudusinghe 2020; Vachon & Klassen 2006; Wilson 2015)

Economic	Environmental	Social
Ability to bring new products to the market	Audits	Audits
Attraction of new customers	Ban of serious health hazard materials	Awarding supplier subsidies to obtain third-party certifications
Customer value	Carbon dioxide emission projects	Code of conduct
Design for reuse and disassembly	Certifications and standards (e.g. ISO 14000, 14001)	Community initiatives
Employee attraction	Collecting and processing of supplier information	Compliance
Employee retention	Control of environmental documents	Cooperation with NGOs or other interest groups
Foreign direct investment	Cooperation with customers	Customer satisfaction
Improved image	Eco-labeling of products	Diversity of supply base
Improved profits	Effective use of by-products	Diversity of work force
Market share	Emission caps	Fair trade agreements
Product life	Environmental awareness training	Health and safety management systems
Profitability	Green logistics	Health and safety of workers
Reduction of packaging waste	Green packaging	Interaction routines with suppliers
ROA	Green product design	Product liability (incl. customer health and safety)
ROE	Green purchasing	Human rights (incl. child labor)
Reliability of supply	Join planning sessions with suppliers	Security of supply
Retention of existing customers	Labeling of hazardous materials	Responsiveness
Revenue	Life cycle assessments	Social and ethical standards (e.g. ISO 26000, SA8000)
Share price	Recycling	Sponsorship
Suppliers' level of service	Reverse logistics	Supplier development
Supply costs	Supplier questionnaires	Sustainable-specific investments
Quality of supply	Sustainability reporting systems	Training
	Waste management	Working time restrictions

Christofi, Christofi & Sisaye (2012) draw attention to the relevance of standardized sustainability reporting. Without standardized environmental and social reporting, the TBL concept will not serve its original purpose. According to Karaman, Kilic & Uyar (2020) reporting on sustainable development initiatives has become an important element in maintaining stakeholder confidence. Environmentally sensitive industries in particular, such as the logistics sector, have begun to engage in sustainability reporting through standardized

frameworks. A common example of a standardized framework is the Global Reporting Initiative (GRI).

Founded in 1997, the GRI is a global standard setter for impact reporting with roots in non-profit organizations and the UN Environment Programme. The first GRI guidelines were published in 2000. (GRI 2022a.) GRI standards include three series: universal standards, sector standards, and topic standards. By covering the most significant impacts on the economy, environment, and people but also focusing on specific topics such as climate change or child labor, the GRI standards allow organizations to report the impact of their activities. (GRI 2022b.) According to Karaman et al. (2020) the ultimate goal of the GRI as a framework is to provide detailed metrics for CSR issues. Nowadays this goal is supported by the globally recognized position of GRI. Prior to the widespread adoption of GRI, companies used a variety of sustainability reporting formats, resulting in large variation in their comparability.

## 2.2. Supply chain management

The deepest purpose of a supply chain is to succeed in generating value through services and products provided to the customer. They should be understood as complex relationship networks instead of linear chains. From a network-oriented view, organizations are bonded via the down and upstream connections throughout their value chain. (Winter & Knemeyer 2013.) Vachon & Klassen (2006) claim that research on supply chain management (SCM) has focused on the network-view and building collaborative advantage both down and upstream.

According to Ali, Gongbing & Mehreen (2019) the supply chain network is based on the interdependence between companies, and it describes relationships, information sharing, product flows, and cash flows between them. A generic supply chain network is introduced in Figure 5. Decisions related to supply chain network design are usually classified as strategic level because revising them in most cases is painful and costs a lot of money. In addition, supply chain network design has a major interaction with other tactical and operational decisions. Strategic planning around the supply chain network allows companies to significantly improve their performance by optimizing total costs. Thus, from a SCM

perspective, network design and evaluation are important but also challenging. (Ali et al. 2019; Celikbilek et al. 2015.)

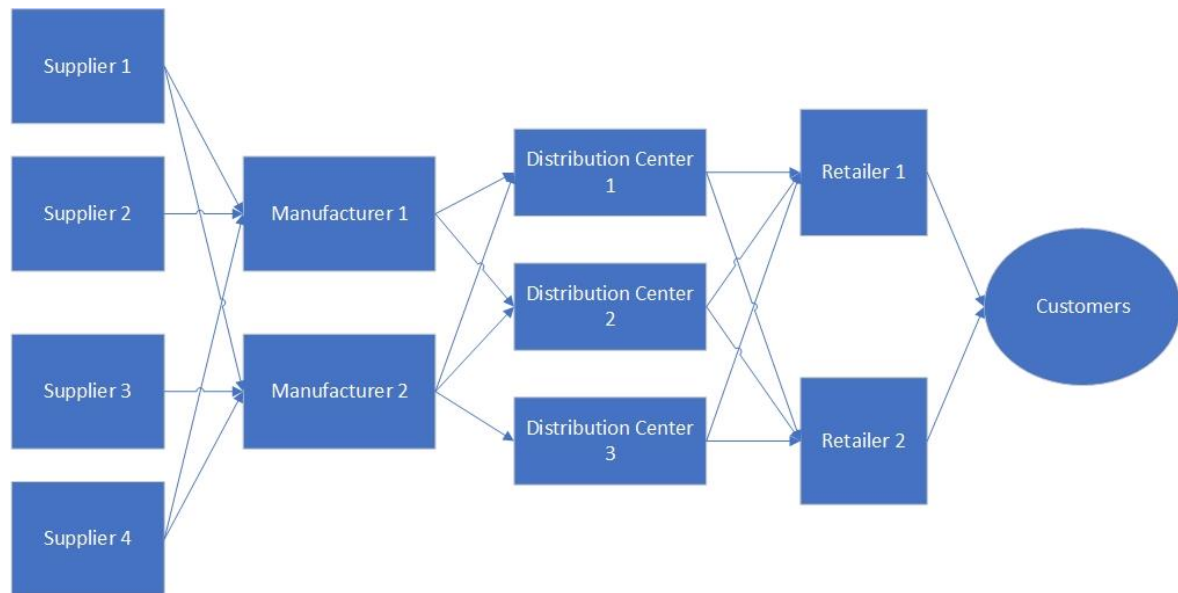


Figure 5. A generic supply chain network (Celikbilek et al. 2015)

Simply put, there are two types of companies operating in supply chains, upstream and downstream. Upstream firms produce commodities forward to downstream firms that further process them and eventually, the finished products are sold to the customer. (Lee & Park 2020.) Hayami, Nakamura & Nakamura (2015) discuss the importance of the distinction between upstream and downstream effects in supply chain performance, as many studies treat them as a homogeneous whole. Nevertheless, the separation of the upstream and downstream impact of a supply chain is crucial. As an example, a significant link has been found between environmental performance and competitive advantage, which however is mainly based on the upstream supply chain activities.

### 2.2.1. The role of suppliers

A company's knowledge of the actors in the supply chain deteriorates due to physical and cultural distances, and number of different levels in the supply chain. This is especially critical for companies that are sensitive to sustainability requirements. The sustainability efforts of such companies are often highly dependent on raw material suppliers operating

upstream in the supply chain. Moreover, a high count of companies is to some extent dependent on such raw material suppliers, called n-tier suppliers hidden behind the focal firm. (Sauer & Seuring 2019.) There is a positive correlation between effective SCM and the success of supplier selection. Selection of suppliers affects company's value chain, and thus might be determinative concerning the future competitiveness and sustainability efforts of a company. (Faisal et al. 2017.)

Frempong, Mu, Adu-Yeboah, Hossin & Adu-Gyamfi (2021) remind that a responsible supplier network cannot be ignored if corporate sustainability practices are likely to lead to better business performance. Faisal et al. (2017) state that supply chain practices such as sharing of information and collaboration with suppliers will lead to better quality and productivity which will finally decrease the number of byproducts produced. Above is a reason which has made companies consider long-term partnerships with a smaller number of suppliers. On the other hand, the evolution of information and communications technology tools supports collaboration with new suppliers as they have made finding, creating, and maintaining new suppliers easier. The number of suppliers has decreased in most companies, leading to a concentration on a mutually beneficial relationship, which in turn helps to tackle supply chain risks effectively. According to Faisal et al. (2017, 1957) the following reasons overall have emphasized the importance of supplier relationships and selection:

- Companies are focusing more on their core competencies
- The supply chain is seen as a source of competitive advantage
- Information and communications technology tools lower the threshold for finding, creating, and maintaining new suppliers
- The need for the supply chain to be agile
- Importance of long-term strategic relationships

Egels-Zandén (2017) claim that the accelerated outsourcing of labor-intensive production, removal of trade barriers, and deregulation of national economies have diversified companies' production geographically especially after the 1980s. Nowadays, many suppliers

operate in a developing or emerging economy where laws and regulatory oversight are weak or even non-existent. In these operating environments, audits carried out by purchasing companies are the single biggest motivator for suppliers in pursuit of responsibility. On the other hand, it has been noted that auditing alone is not an effective way to improve supplier responsibility, but that increased auditing may also reduce suppliers' efforts to be more sustainable. Other tools of the purchasing company can be e.g. offering loans to suppliers, committing suppliers to audits in advance, reducing suppliers' margins, requiring governments or other purchasing companies to penalize suppliers for irresponsible conduct, agreeing in advance to punish a supplier for harm to employees or the environment, publishing negative audit reports, penalizing the supplier for hiding, and making hiding more difficult. (Plambeck & Taylor 2016.)

Ashby (2016) defines reshoring as the reverse of a previous offshoring decision and relocation of production closer to the company's home country. Reshoring is not a new phenomenon, but its popularity has been growing and with it, the interest in media and academic research has also grown. Orzes & Sarkis (2019) state that environmental sustainability is a motive for reshoring decisions. However, in terms of reshoring decisions, it is unlikely to be among the topmost crucial factors, but further research is needed on the topic.

### 2.2.2. Characteristics of sustainable supply chain management

According to Seuring & Müller (2008, 1700) sustainable supply chain management (SSCM) is "the management of material, information and capital flows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e. economic, environmental and social, into account which are derived from customer and stakeholder requirements". Roy, Schoenherr & Charan (2018) classify SSCM as a sub-discipline of SCM and state that interest in it has grown during the past two decades.

In today's competitive market, supply chains connect different actors and industries to fulfill the set requirements (Sauer & Seuring 2019). Efforts to reach sustainability goals have shifted from the level of individual companies to the level of the entire supply chains. This is a logical consequence of the fact that all functions from raw materials to the finished

product are part of SCM. SSCM has become even a key strategic factor for companies globally as it addresses risks related to sustainability, arising opportunities, and the whole value chain view. (Faisal et al. 2017.)

SSCM can be seen as a method to reach stakeholders' demand, while gaining a better competitive position through improved environmental and social performance at a supply chain level. Companies nowadays understand the importance of sustainability but to reach higher set of standards, tougher efforts are needed to make the entire supply chain truly sustainable. Nevertheless, sustainability today is not only a game of complying with mandatory regulations set by authorities but a driver for growth and competitive advantage. Several studies prove that SSCM has a direct link with the sustainability of a supply chain and competitive advantage but also with the improved profits through more efficient operations. (Faisal et al. 2017.)

The TBL approach is the foundation for the performance of SSCM. On the other hand, SSCM has also been shown to have a significant positive effect on TBL performance, demonstrating the tremendous importance of SSCM in promoting TBL performance. It has been argued that practices aiming toward social sustainability such as SSCM are detrimental to companies as they cause additional costs. These arguments have been refuted in studies showing that investment in sustainability not only pays for itself, but often also brings big returns. History can also show multiple examples of companies that have ignored everything else but the economic dimension and by doing that ruined their reputation and credibility. (Baliga et al. 2019; Kitsis & Chen 2020)

Khan, Chen, Suanpong, Ruangkanjanases, Kittikowit & Chen (2021) argue that there is a significant positive correlation between CSR and SSCM. CSR is directly related to SSCM and can lead to its effective application. With CSR at the heart of corporate culture, it is more natural for a company to adopt a corporate culture atmosphere that supports development projects related to, for example, reducing emissions and improving productivity. In addition, companies that comply with CSR are at the same time exposed to pressure from external stakeholders, which may even force them to adapt to meet the requirements of external stakeholders and therefore act as a driver for SSCM.

### 2.2.3. Differences between SCM & SSCM

Beske & Seuring (2014) discuss whether a major difference exists between SCM and SSCM and if all future SCM research would be SSCM research. Business interest towards SSCM has grown continuously, but SCM itself includes many sustainability issues. SCM is at least partly based on the idea of minimizing waste, as it can improve financial profitability. Early links to environmental management were emphasized by the desire to optimize financial performance, demonstrating the consideration of the environmental aspect at an early stage of SCM. The ideas have since then evolved into green SCM (GSCM) and then into SSCM. A widely accepted fact is that the SSCM is a theoretical and practical extension of the SCM, adding accountability criteria. On the other hand, the distinction between the determinants of these two remains at least partially unclear. (Beske & Seuring 2014; Winter & Knemeyer 2013.)

To observe some distinguishing factors, only SSCM recognizes commitment to triple bottom line, stakeholder management, and life cycle assessment. Both SSCM and SCM contain different standards and certificates, but a specific set of them is developed and applied for SSCM to achieve sustainability targets. Perhaps the most significant difference is the pursuit of all three dimensions of sustainability - how sustainability is integrated into the organization. SSCM should treat all dimensions equally, while from a TBL point of view SCM is strongly focused on pursuing the economic dimensions. Nevertheless, in the long run, SCM of most organizations will transform into more sustainable as the emphasis on environmental and social issues will increase as their positive impact on company performance will be noticed. Today most organizations recognize these challenges and have some knowledge regarding them through a reactive approach. But only companies with sustainability as a core value will go the extra mile to make their supply chain truly sustainable. (Beske & Seuring 2014.)

The empirical part of this thesis focuses on finding the environmental and social SSCM practices through annual reports. Although, based on the TBL concept, the economic dimension has an essential role in corporate sustainability, the research data used in this study would most likely provide only incomplete and weak information in this regard. For this reason, the economic aspect is excluded from the empirical part.

### 3. METHODOLOGY

The theoretical part of this thesis is followed by the methodology that grounds the empirical part. The methodology is divided into four different chapters. Research method deals with the general philosophy of how the research has been carried out. It is followed by data collection, which describes how and on what basis the companies under examination have been selected. Also, an overview of the case companies is provided. It is followed by data analysis and finally the consideration of reliability and validity.

#### 3.1. Research method

The very first choice of a researcher is to pick a qualitative, quantitative, or mixed methods design for the research. Qualitative and quantitative research can be distinguished based on their relationships to numerical and non-numerical data. A quantitative research method refers to a data collection technique or data analysis method that utilizes or produces numerical data. A qualitative research method, on the other hand, often refers to a data collection technique or data analysis method that utilizes or produces non-numerical data. It is important to distinguish these two research methods, although it is sometimes challenging to draw a clear line between them. Often, both research methods can also be combined in business and management research. (Saunders, Lewis & Thornhill 2016.)

The empirical part of this thesis was conducted using a qualitative research method. The qualitative research method was chosen because the aim was to study annual reports of geographically and industrially dispersed sets of companies that have been historically successful in an international sustainability ranking and find SSCM practices. In this study, term “annual report” also includes possible separate sustainability report released by a company, which have become more common in recent years. However, this data and its analysis were largely non-numerical. According to Eriksson & Kovalainen (2008) qualitative approach in business research enables focusing on complex business phenomena in their original context and then producing knowledge about how and why things work like that in a real-life business context.

The empirical part of this thesis utilized the case study method. The case study approach was chosen as it supported the goal of finding environmental and social sustainability practices from the annual reports, while the companies under examination represent different industries. Hubbard (2009) defines environmental and social performance as challenging to quantify and compare due to company and industry-specific differences, while Hsu et al. (2014) mention the industry's influence on SCM practices. On the other hand, Kähkönen (2011) classifies case study method as an excellent choice when the aim is to find detailed explanations of best practices.

A case study approach can be chosen when conducting qualitative or quantitative research. Case study has a long history in academic research and its popularity can be explained by the ability to present complex and difficult-to-understand business issues in an easier-to-understand format. The most important thing is the construction of case, the research question(s) should always support the understanding and resolving of the cases. (Eriksson & Kovalainen 2008.) Overall, case research has been widely recognized as valuable in SCM research (Kähkönen 2011).

### 3.2. Data collection

A corporate annual report is a document published by public companies and it is also required through corporate reporting requirements in most Western economies. To build an image of the organization, annual reports utilize the tools of management, marketing, and communication theory. (Stanton & Stanton 2002.) As a data collection method, annual reports are classified as documents. Documents can be written, graphical, recorded, or other visual material that describes things that have already happened. (Kananen 2017.) According to Myšková & Hájek (2018) annual reports are an important source for examining corporate sustainability, as the company's success is measured not only by financial profitability but also by quantitative and qualitative indicators related to sustainability. This should motivate companies to use the annual report as a tool to tell their stakeholders what sustainability measures the company has taken and what results have been achieved.

The companies for this study were selected based on their historical rankings in the Global 100 Index maintained by Corporate Knights. More specifically, the determining factor was

how many times the company had appeared in the Global 100 Index between 2013-2022. If more than one company had appeared in the index the same number of times during the selected time period, the selection was made based on the average ranking. The 10-year sample supported the aim of examining a group of companies that have historically been successful in the international sustainability ranking but also gave emphasis to the sustainability efforts in the recent past. Geographical diversification was implemented by selecting two (2) companies from Asia, two (2) companies from Europe, and two (2) companies from North America, making it a total of six (6) companies. Companies could be selected from all industries, excluding industries in which the operating companies do not generally have a sufficiently large supply chain for this study. In the selection, the effects of possible mergers and acquisitions were considered on a case-by-case basis. The companies selected for the study and their historical development in the Global 100 Index are presented in Figure 6. The best possible ranking is 1, while the worst possible is 100. Not all selected companies existed in the index every year during the reference period.

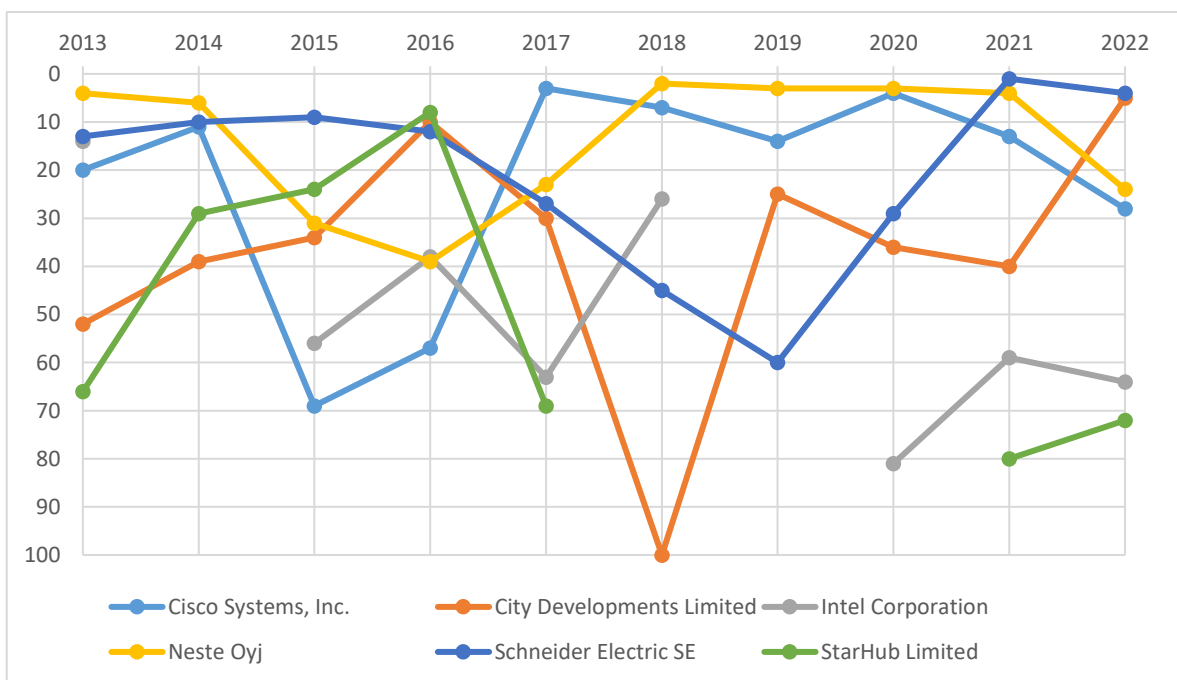


Figure 6. The companies selected for the study and their historical development in international sustainability comparison, Global 100 Index (Corporate Knights 2022a)

Based on the selection criteria presented above, the companies selected from Europe were Neste Oyj (Neste) and Schneider Electric SE (Schneider Electric). The companies selected

from North America were Cisco Systems, Inc. (Cisco Systems) and Intel Corporation (Intel). The companies selected from Asia were City Developments Limited (City Developments) and StarHub Limited (StarHub). Table 2 shows the basic information of all selected case companies.

Table 2. Basic information of the case companies (PPP Revenue has been rounded to the nearest hundred million) (Corporate Knights 2022a)

	<b>Region</b>	<b>Country</b>	<b>Industry</b>	<b>PPP Revenue</b>	<b>Appearances in the index 2013-2022</b>	<b>Average ranking in the index</b>
<b>Cisco Systems</b>	North America	USA	Telephones and telecom equip manufacturing	US\$49,8 billion	10	23
<b>City Developments</b>	Asia	Singapore	Real estate and leasing	US\$2,5 billion	10	37
<b>Intel</b>	North America	USA	Semiconductor and electronic components manufacturing	US\$77,9 billion	8	50
<b>Neste</b>	Europe	Finland	Refining, petrochemicals and basic organic chemicals	US\$17,1 billion	10	14
<b>Schneider Electric</b>	Europe	France	Industrial Conglomerates	US\$36,6 billion	10	21
<b>StarHub</b>	Asia	Singapore	Telecom providers	US\$2,4 billion	7	50

Published first time in 2005, Global 100 is an annual index that ranks the world's 100 most sustainable public companies with revenue over US\$1 billion (Corporate Knights 2022a). A new index is released each year. The ranking of companies is mostly based on publicly disclosed data (e.g. sustainability reports, company websites, and financial filings) and companies on the data is verified in cooperation with the companies. Companies are not required to register or pay to participate in the index. The detailed methodology of the index is publicly available, however, it is mainly based on 24 KPIs including resource management, employee management, financial management, clean revenue, clean

investment, and supplier performance. The index is conducted by a Canadian, employee-owned media and investment research company Corporate Knights. (Corporate Knights 2022b.)

The goal of the Global 100 index is to list the most sustainable companies of the world in the current socio-economic context (Corporate Knights 2020b). Therefore, relying on the index supports the goal of this study to find companies with a sustainable supply chain to be examined. Corporate Knights has also made the methodology of the index highly transparent, which contributes to its applicability to academic research (Henry, Buyl & Jansen 2018). Overall, the index enjoys widespread recognition and has been quoted in several well-recognized financial media. In a long-established Finnish business newspaper *Kauppalehti* (Vehviläinen 2015) Pekka Tuovinen, Director of Sustainability at Neste, mentions the Dow Jones Sustainability Indexes and the Carbon Disclosure Project Indexes as the most recognized sustainability indexes in the world. However, he describes the Global 100 Index as the most demanding of all and believes that manipulating its results would be difficult if not impossible.

### 3.3. Data analysis

Data analysis is one of the most essential part of a case research. Thus, the researcher should be aware of existing data analysis techniques. The data analysis techniques known in the case research are data reduction, data display, and conclusion drawing and verification. (Kähkönen 2011.) The data is often extensive, so it is often necessary to process it before the actual analysis can take place. Coding is an approach that seeks to clarify and condense the material to modify it usable. The coding can be done, for example, by marking or compressing the data with a text editor program. However, it is important to notice that the purpose of coding is not to reduce the qualitative content of the data. (Kananen 2017.) According to Eriksson & Kovalainen (2008) pre-planned systemic coding is the most used method in case study research if the study is based on a previous theory and tries to either improve or test it. The idea is that the previous theory would provide a basis for a pre-developed thematic coding scheme.

The annual reports of companies examined in this study were downloaded from the companies' web pages. Before the actual analysis of the data, the data was processed using coding. First, each annual report was read through, and coding was used by utilizing a text editor program. Chapters that were relevant to this study were highlighted using color coding. Topics related to environmental and social sustainability and practices were highlighted with different colors. After the highlighting was done, the gathered data was carefully analyzed and practices affecting the sustainability of the supply chain were recorded. Based on the analysis, this thesis succeeded in finding environmental and social practices that are applied in SSCM. The answers to the research questions are presented in chapter 6.

#### 3.4. Reliability and validity

The classic criteria of reliability and validity can be used to assess the accuracy of qualitative research. Reliability indicates the extent to which the procedure performed results in the same result in repeated experiments, while validity describes how accurate is the description or explanation of the findings of the study. (Eriksson & Kovalainen 2008.) Reliability and validity wise qualitative and quantitative research are evaluated from different perspectives. However, the quality of qualitative case research depends on its reliability and validity. (Kähkönen 2011.)

Since the empirical part of this thesis is conducted using a qualitative case study, where the annual reports of six different companies have been used as data, the chance of getting exactly the same result is really low. On the other hand, the aforementioned increases the reliability of the results, as annual reports of companies representing different industries have been used. According to Vilkkä (2021) the quantity of research material does not determine the quality of qualitative research, but the quality of the material and analysis is vital. The reliability of this study is also significantly increased by choosing companies that have already been found to be sustainable as research material, instead of choosing a random set of companies. The recognition the companies have already received brings certainty that the practices they have adopted have led to better sustainability performance in the past years.

## 4. EMPIRICAL PART

The empirical part of this thesis is based on the annual reports of six companies introduced in the previous chapter. The companies are presented in alphabetical order. First, each company is briefly introduced, after which the practices observed in the annual reports and their backgrounds are discussed. Finally, a table has been drawn for each company, which compiles all the practices found.

### 4.1. Cisco Systems

Cisco Systems is a global technology company whose main business purpose is to produce equipment and solutions that enable connection to the Internet. The company's offering includes networking, collaboration solutions, security solutions, wireless and mobility, data center, Internet of things, video, analytics and software solutions. Cisco Systems emphasizes the importance of cooperation in the pursuit of sustainability. The thinking is based on the fact that no individual actor can achieve nearly the same result by cooperating with stakeholders such as customers, authorities, and even competitors. In addition to the annual report, Cisco Systems publishes a separate Purpose Report that covers three separate main topics, power, inclusive, and future. (Cisco 2022.)

Cisco System's aim is to set concrete greenhouse emission reduction targets for its supplier during the next few years, and it requires manufacturing and component suppliers to publish greenhouse their greenhouse emissions annually. This is believed to be the best way to reduce emissions. The purpose is to reach set goals by cooperating and collaborating, not by dictating. For example, training has been organized for suppliers so that they could better understand the justifications for the emission targets. In 2020, the supply chain explained a large part of Cisco System's greenhouse emissions. Courageous and innovative solutions with the potential to reduce emissions are offered funding through the new funding portfolio. Also in 2020, a survey for suppliers related to water use was carried out. The survey made it possible to identify cases where water consumption should be reduced in particular. After the survey, at least two large projects aiming at reducing water use have been implemented with suppliers. (Cisco 2022.)

Cisco System's environmental work is guided by ISO 14001 standardized environmental management system. Circular economy solutions play a very centric role. Emphasizing the circular economy starts in the product design phase, where the aim is to favor recyclable and renewable materials. The products are also designed to be easier to repair so that their life cycle would be longer. In product packaging, the aim is to minimize single-use plastics, foam, and all excess material and favor recyclable materials with the help of new packaging innovations. Customers are also offered a service to return and reuse products, Cisco Systems is also committed to a completely free return option in certain markets by the customer's request. An efficient circular economy also requires efficient reverse logistics, which has been taken into account in logistics network planning. (Cisco 2022.)

Respecting human rights throughout the supply chain is an important part of social sustainability. Human rights work is based on the company's Global Human Rights Policy. There is also a human rights program, which aims to identify possible human rights violations covering the entire supply chain. Support for complex questions is also sought using external experts and various organizations. The procurement of minerals involves many human rights issues and due diligence inspections are used to minimize the risk of violations. Cisco Systems collaborates with suppliers to achieve better practices and standards. Employees are also offered the opportunity to give feedback on working conditions anonymously. Cisco Systems is committed to doubling its current purchase from diverse suppliers by 2023. Diverse suppliers can mean for instance businesses that are owned by minorities. Crisis management is one way to support local communities in cooperation with NGOs. (Cisco Systems 2022.)

The aim of the Supplier Code of Conduct is to regulate requirements related to health and the environment. It also covers the suppliers' own suppliers. Audits are widely used as a tool to measure suppliers' performance. In the case of grievances, suppliers must draw up a corrective action plan, which presents the causes and corrective measures. Cisco Systems also provides supplier training if needed. Suppliers are communicated about the fulfillment of requirements with supplier score cards. Special attention has been paid to the use of dangerous chemicals that occur in the electronics industry. Clear expectations have been set for suppliers about how the safety of workers and the environmental impact should be

considered when dealing with dangerous chemicals. (Cisco Systems 2022.) Table 3 summarizes Cisco Systems’ environmental and social SSCM practices found in the annual report.

Table 3. A wrap-up of Cisco Systems’ environmental and social SSCM practices (Cisco Systems 2022)

Environmental	Social	Both
Environmental management system	Collaboration with external partners in human rights questions	Audits
Funding new solutions	Due diligence inspections	Collaboration with stakeholders
Green packaging	Global Human Rights Policy	Dangerous chemicals policy
Green product design	Supplier diversity	ISO standards
Recycling	Supporting local communities	Risk assessment
Reverse logistics	Whistleblowing channel	Supplier Code of Conduct
Setting GHG targets for suppliers		Supplier score cards
Supplier water use survey		Supplier training
Water use reduction projects with suppliers		

#### 4.2. City Developments

City Developments is one of the largest real estate companies in the world, present in up to 29 different countries or regions. The company develops and manages a variety of properties, such as residential and commercial ones. In addition, the company also operates in the hotel business through its wholly-owned subsidiary. City Developments’ thinking of operating as a corporate citizen and creating sustainable value for its shareholders has continued since 1995 – long-term value-creating is emphasized instead of short-term profits. The sustainability work is guided by the annual materiality assessment, which aims to identify topics that are important to the stakeholders. In the recent materiality assessment, climate resilience, energy efficiency and adoption of renewables, and innovation were the top-3 most important materiality issues. In addition to the annual report, the company publishes a separate integrated sustainability report. (City Developments 2022.)

In reducing CO2 emissions, City Developments emphasizes cooperation in product development. For instance, since 2017 product development cooperation has been conducted with NUS College of Design and Engineering. A concrete indication of the result is from 2021 with Porsche Asia Pacific and SP Group, when the charging infrastructure for electric cars was expanded at the company's properties. Key stakeholders are also encouraged to utilize eco-friendly product design and non-toxic materials. Cooperation has also been established related to recycling, cooperation with ALBA E-waste Smart Recycling led to a collection of consumer electrical waste in Singaporean shopping malls. In its efforts to reduce emissions, the company utilizes recycled materials in the form of steel and concrete, in addition to which other low-emission materials are favored on construction sites. The environmental and energy management system complies with ISO 14001 and ISO 50001 standards and supports the company in reaching its environmental goals. (City Developments 2022.)

The ISO 45001 level health and safety management system together with the environmental, health, and safety assessment create the basis for proper risk management on construction sites. Suppliers are also required to conduct their own risk assessments related to occupational safety, such as working height. Training is also provided for suppliers on key risks, such as working at height. Builders are also required to have an OHSAS 18001 or ISO 45001, or at least a bizSAFE level 3 certified health and safety management system. City Developments' detailed safety regulations also apply to all subcontractors working on construction sites. A special feature of occupational safety is the use of pest control systems to prevent the spread of dengue fever. Each site also has an environmental, health, and safety committee that also represents the site's subcontractors. The aim of the committee is to hold meetings to move towards a safer working environment. All construction sites also have a hotline maintained by the main contractor through which anyone can provide feedback regarding environmental or safety issues. The most common topic of feedback has been construction noise, as a result of which more attention has been paid to construction noise limits, for example by utilizing audits. (City Developments 2022.)

In 2021, approximately 100 management and operations personnel participated in a virtual workshop led by an external consultant to address risks related to labor and raw materials sourcing. City Developments has responsible procurement guidelines that guide the

selection of suppliers on socially and environmentally sustainable grounds. The aim is to favor environmentally friendly and recycled materials. All suppliers must also sign a supplier code of conduct, according to which suppliers must meet City Developments' environmental, health, safety, and ethical employment requirements. The company is also active in supporting local communities. It participates in initiatives and makes donations and sponsorship in accordance with good governance. (City Developments 2022.) Table 4 summarizes City Developments' environmental and social SSCM practices found in the annual report.

Table 4. A wrap-up of City Developments' environmental and social SSCM practices (City Developments 2022)

Environmental	Social	Both
Avoiding toxic materials	Donations & sponsorship	Audits
Co-operation in product development	Health and safety management system	Construction site hotlines
Environmental and energy management system	Human rights policy	Environmental, health, and safety assessment
Green product design	Joining community initiatives	ISO & OHSAS standards
Recycling	Pest control	Materiality assessment
Using recycled materials	Supplier risk assessment	Responsible procurement guidelines
	Supplier training	Site environmental, health, and safety committees
		Stakeholder collaboration
		Supplier Code of Conduct
		Virtual workshops

#### 4.3. Intel

Intel is the world's leading semiconductor manufacturer, traditionally known for its central processing units. The processing units manufactured by the company are sold directly to B2C or B2B customers who can integrate the processing units into their products. Intel processing units and the innovative technologies it develops are utilized in, for example, cloud services, artificial intelligence, and autonomous driving. However, more than half of the company's revenue comes from the PC-centric business. In addition to the annual report,

Intel publishes a separate Corporate Responsibility Report that addresses corporate responsibility issues. (Intel 2021.)

Compared to the general operating model in the industry, Intel has a significant amount of in-house production, and also the share of local sourcing is increasing. Nevertheless, in 2020, more than a hundred tier 1 suppliers were asked to fulfill a supply chain climate change questionnaire, where suppliers described their carbon and water footprint. Intel strives to reduce the environmental impact of its products throughout the whole product lifecycle. The aim is to use the raw materials responsibly and the environmental aspect is also taken into account in the design of the packaging and eco-design. Intel also invests in conservation projects and collaborates with policymakers, other companies, suppliers, NGOs, and other stakeholders. Intel also has an environmental management system in accordance with the ISO 14001 standard. Efficient utilization of reverse logistics reduces the environmental impact of the supply chain, approximately 50-60% of returned products are reused and more than 99% of components that cannot be reused are recycled. Since 2008, environmental performance has been a factor affecting the annual performance bonuses. (Intel 2021.)

Intel's human rights activities are governed by the Intel Global Human Rights Principles. The company emphasized that it does not accept any human rights violations in its supply chain. This is highlighted in the contracts with suppliers and the training provided to them. The Corporate Responsibility Office is responsible for the company's human rights program and collaborates with external experts, suppliers, and other stakeholders related to human rights. Human rights-related risks are managed using Intel's in-house developed risk management system, which covers more than 100 tier-2 suppliers. Intel is a member of the Global Business Initiative on Human Rights and is working with the European Council on better human rights. Risks related to the procurement of minerals are addressed in the Responsible Minerals Sourcing Policy and cooperation is being established with several NGOs. Intel's goal is a safe and accident-free workplace that also applies to subcontractors. Suppliers are trained a lot in occupational safety. Since 2001, an extensive environmental, health, and safety management system has been in use. Intel supports the local communities in which it operates in many different ways. Support has been provided to organizations working to promote social justice and combat racism. One beneficiary for example is Sense International India, which supports children with multiple disabilities. (Intel 2021.)

As a founding member of the Responsible Business Alliance, Intel has high expectations for its business partners. The Code of Conduct, which emphasized responsible and ethical practices, extends to suppliers as well as all other business partners. Due diligence process, supply chain risk-based assessment, supplier report card, supplier rewarding, and supplier audits are being used to achieve customer confidence in a sustainable supply chain. Expectations towards suppliers are communicated in contracts, websites for suppliers, meetings, and training. Efforts are being made to develop suppliers, there are several free-of-charge tools and online content available. As Intel highlights the importance of occupational health and safety, suppliers are required to utilize safety management systems and work-hours management but also prevent the use of forced and bonded labour. (Intel 2021.)

Intel collaborates with internal and external stakeholders, such as customers, NGOs, other companies, trade associations, governments, suppliers, local communities, and its employees on environmental and social issues. Local communities are supported through human rights initiatives and programs that provide training and technology to them. Several members of Intel's board of directors pose specific expertise in ESG-related issues, and such expertise is also emphasized once seeking new board members. The company is also a member of the Thirty Percent Coalition, which aims to increase the number of women on corporate boards. (Intel 2021.) Table 5 summarizes Intel's environmental and social SSCM practices found in the annual report.

Table 5. A wrap-up of Intel’s environmental and social SSCM practices (Intel 2022)

Environmental	Social	Both
Complying with directives & standards (e.g. ISO 14001)	Donations and charity	Code of Conduct
Eco-design	Human rights principles	Collaboration with stakeholders
Environmental management system	Responsible minerals sourcing policy	Due diligence process
Green packaging	Risk-management system covering tier-2 suppliers	Joining initiatives
Recycling	Safety management system	Preferring local sourcing
Reuse	Sponsorship	Supplier audits
Reverse logistics	Supplier training	Supplier collaboration
Supplier questionnaire	Work-hours management	Supplier report card
		Supplier rewarding
		Supply chain risk-based assessment

#### 4.4. Neste

Neste has four separate reporting segments, “Renewable Products”, “Oil Products”, “Marketing & Services”, and “Others”. Neste aims to be a global leader in renewable and circular economy solutions. This is driven by the significantly growing demand and backed by accelerating climate actions and favorable regulation. However, Neste has already the global leader position in renewable diesel, sustainable aviation fuel, and renewable feedstock solutions for various chemicals and polymers. The sustainability goal is to interlink biodiversity, climate human rights, raw materials, and the supply chain. Focus is not only on a focal company’s operations, but the sustainability vision aims to cover the whole value chain. Neste’s annual report 2021 includes a separate chapter that covers sustainability issues. (Neste 2022.)

A materiality assessment is conducted every second year, which results in a framework for the company’s sustainability efforts. The Neste Code of Conduct was renewed in 2021 and also suppliers are required to comply with ethical business standards as stated. In addition, suppliers providing renewable feedstocks must comply with the Responsible Sourcing Principle, Human Rights Principle, and the local legislation. The close co-operation with various NGOs is noteworthy. For example, in 2021, a partnership began with Fauna & Flora International to protect biodiversity. In addition, a biodiversity assessment has also been

launched with local actors, and actions related to biodiversity are also required from suppliers.

From 2021, water risks were also part of biodiversity impact evaluation, and water risk assessments of overall raw material supply chains. Neste's goal is to achieve a carbon-neutral value chain by 2040. Steps have already been taken to achieve this goal. For example, wind power-related deals have been done with suppliers, the logistics network is being optimized and cooperation with suppliers is being intensified with regard to emissions from raw materials. The methods used to calculate emissions comply with the European Union's Renewable Energy Directive II (RED II), CORSIA or ISO 14040, ISO 14044, and ISO 14067 standards. (Neste 2022.)

From an environmental point of view, special requirements for suppliers were emphasized. The selection of suppliers relies on a careful and organized approach and suppliers are audited. Renewable raw materials are only sourced from suppliers who meet strict sustainability criteria, including compliance with Neste's Supplier Code of Conduct. Suppliers are supported through training in adopting the Supplier Code of Conduct. The origin of renewable raw materials must also always be traceable. All renewable raw materials are also either certified or have been checked for compliance with the laws and regulations of the country in which the end product is delivered. For example, palm oil producers are required to be certified, which can be achieved by adopting sustainable practices. In mapping plantations in the supply chain, publicly open data (e.g. ISCC, RSPO and, ISPO certificates) and suppliers' reports are utilized. Interaction with suppliers is regularly promoted virtually and through virtual conferences on grievance management, due diligence, sustainability policy development, traceability, training and workshop, third-party suppliers, reporting, and transparency. (Neste 2022.)

The annual report also emphasized the importance of children's rights and human rights. The 2030 goal aims to create an equitable and truly inclusive value chain that includes a certain minimum wage, the promotion of responsible recruitment practices, increased access to education for children and the reduction of inequalities. The aim is also to offer young people work and education, for example through summer jobs. Neste works actively to protect the right and safety of employees. For example, 99 % of the company's suppliers of

renewable feedstocks are socially screened. Other activities include joining the Consumer Good Forum's Human Rights Coalition, ongoing interaction with NGOs, human rights-focused audits, supplier collaboration, supplier training, and supplier sustainability surveys. (Neste 2022.)

Neste wants to ensure the wide publicity of information related to its own business and strives to operate ethically and responsibly in society. In 2021, in cooperation with a fire engineering company, the fire safety risks of two Chinese strategic supplier partners were assessed. Donations and charity are used as a tool to act in accordance with Neste's values and strategy. Donations are in line with three key elements: innovation & education, climate & environment, and diversity & inclusion. For instance, local volunteering for children and young people is supported by annual donations. Among others, direct sponsorship or donations were also made to the Baltic Sea Action Group, Buffalo Bayou, and the Finnish Refugee Council. (Neste 2022.)

Risk management is also emphasized in the annual report. The most significant risks related to sustainability are identified and assessed on annual basis. Tailor-made country risk assessment methods are utilized in the countries where supply chains operate. In addition to country risk assessment, risk assessment may include e.g. counterparty risk assessment, desk-based research, mapping of supply chains and operations, discussions with expert stakeholders, supplier self-assessment questionnaires, and supplier engagement. Suppliers of raw materials for renewable products must go through sustainability due diligence before their approval, which is managed mainly through Neste's supplier sustainability portal. The company has also developed its own grievance mechanism. In 2021, sustainability desktop reviews based on publicly available information about supplier was introduced. Overall, different partnerships are crucial in achieving sustainable development goals. Neste engages, for instance, with customers, officials, industry associations, cooperation bodies and supporting initiatives, student associations, universities, research organizations, and local communities. (Neste 2022.) Table 6 summarizes Neste's environmental and social SSCM practices found in the annual report.

Table 6. A wrap-up of Neste's environmental and social SSCM (Neste 2022)

Environmental	Social	Both
Audits	Anti-corruption principle	Code of Conduct
Biodiversity assessment with suppliers	Dedicated human rights specialists for high-risk projects	Collaboration with NGOs Collaboration with stakeholders
Carbon dioxide emission project	Donations and charity	Collecting and processing supplier information
Complying with directives & standards (e.g. REDII, ISO series)	Human right focused audits Human rights principles	Counterparty risk assessment
Grievance mechanism	Joining initiatives	Desk-based research
Optimization of logistics chain	Promoting children's rights	Grievance mechanism
Raw material certification	Responsible recruiting	Materiality assessment
Raw material traceability	Securing living wages	Supplier Code of Conduct
Recycling	Supplier safety assessments	Supplier self-assessment questionnaires
Responsible sourcing principle	Supplier screening using social criteria	Supplier sustainability portal
Supplier development	Supplier sustainability surveys	Supplier training
Supplier due diligence		Supply chain mapping
Supplier reporting		Sustainability desktop review
Supplier workshops		Sustainability due diligence
Wind power agreements		Sustainability risk identification

#### 4.5. Schneider Electric

Schneider Electric's goal is to help its customers achieve a more efficient and sustainable business with the solutions it offers. In addition to electrical engineering equipment, the company offers its customers services and software solutions. The products and solutions offered to customers are usually connected to a larger system. Equipment and components can be sold to partners who build a system for their customers, or alternatively, Schneider Electric itself can also build and deliver a finished system to the customer on a project basis. According to the company, sustainability guides all its operations and development. It is also extended to the entire value chain and stakeholders. In addition to the annual report, Schneider Electric publishes a separate Sustainable Development Report. (Schneider Electric 2022.)

Schneider Electric's sustainability work is based on a materiality assessment, which involves internal and external stakeholders. In 2020, almost 200 unique stakeholders were contacted

through a survey or interviewed for that year's materiality assessment. The company highlights the importance of traceability in all its products. As purchases are the single biggest part of the company's greenhouse emissions, special attention is currently being paid to them. Concrete action is a close collaboration and training with suppliers. In particular, suppliers' shortcomings in calculating greenhouse emissions have come to the fore, for which the aim is to provide tools. The use of green materials and packaging has also been emphasized, in 2021 recycled cardboard was used in packaging and many initiatives were launched with suppliers. The goal of the Waste-to-Resource program is to achieve a high utilization rate for waste. The company is also trying to make its logistics more sustainable by optimizing its but also by piloting low-emission innovative transport solutions air, sea, and road. (Schneider Electric 2022.)

Since product or system defects can lead to significant additional costs or dangerous situations, quality and product safety are particularly important. Quality and product safety are monitored at Schneider Electric by applying well-known standards. A quality management system according to the ISO 9001 standard is also in use at the group level. Schneider Electric has created a Global Human Rights Policy, which defines the company's approach to human rights. In addition to being a general framework, the purpose is to guide individual employees and teams when dealing with human rights issues at work. Human rights are also strongly featured in the selection of new suppliers. Schneider Supplier Quality Management is a process for selecting new suppliers that combine surveys and audits including human rights and health and safety assessments, while also environmental questions are taken into account. The company also has a Supplier Code of Conduct, which sets expectations for suppliers on social issues. Also, suppliers must prove the origin of any conflict minerals. Schneider Electric provides support for various stakeholders, such as NGOs. (Schneider Electric 2022.)

The company strongly highlights its risk management. A separate team reports to top management about major occurring risks. A separate risk management system is used to monitor and manage over 200 high-risk suppliers. Risk management is also present in the selection of suppliers, the most common challenges are related to safety at work sites. Shortcomings are answered by increasing audits, training, and workshops with suppliers or contractors. Suppliers and other stakeholders also have opportunity to report their

observations using the whistleblowing channel. The Decent Work program implemented with strategic suppliers is based on the recommendations of the International Labor Organization. The main goals of the program are for example reasonable working hours and occupational safety. (Schneider Electric 2022.)

With the help of supplier monitoring, the aim is to form a real-time picture of suppliers' processes. Suppliers are also supported with training and by sharing good practices with them. A Sustainable Procurement Strategy has been designed with several stakeholders and it considers environmental and social issues. Schneider Electric has utilized a so-called supplier diversity program, which aims to offer opportunities to a diverse group of different suppliers. The program can help to support companies owned by minorities, for instance. Schneider Electric cooperates with several NGOs related to all dimensions of sustainability. Requirements have also been set for suppliers, for example, the company's Anti-Corruption Compliance program defines zero tolerance toward corruption. Various communities worldwide are also supported through initiative and sponsorship. (Schneider Electric 2022.) Table 7 summarizes Schneider Electric's environmental and social SSCM practices found in the annual report.

Table 7. A wrap-up of Schneider Electric's environmental and social SSCM practices (Schneider Electric 2022)

Environmental	Social	Both
Green materials	Anti-corruption	Collaboration with stakeholder
Green packaging	Global Human Rights Policy	Complying with standards (e.g. ISO 9001)
Innovative logistics	Initiatives and sponsorship	Materiality assessment
Optimizing logistics	Product safety	Supplier audits
Providing GHG-tools to suppliers	Quality management system	Supplier Code of Conduct
Recycling	Risk management system	Supplier collaboration
Traceability	Supplier diversity program	Supplier monitoring
	The decent work program	Supplier quality management
	Whistleblowing channel	Supplier surveys
	Workshops with suppliers	Supplier training
		Sustainable procurement strategy

#### 4.6. StarHub

StarHub has a total of four different operating segments: “the telecommunications”, “Cybersecurity”, “high security assurance product”, and “the Regional Information Communication Technology”. The company has solid opportunities to expand its business to cover more than traditional telecom operator services and aims to continuously invest in digitalization. The board of directors is responsible for the strategic direction of sustainable development and matters related to sustainable development are part of the company’s overall strategy. StarHub’s annual report 2021 includes a separate chapter “Sustainability report” that covers sustainability issues. (StarHub 2022.)

The 2021 materiality assessment update prioritized issues that have a significant impact on stakeholders and that StarHub itself as a company can have a significant impact on. The materiality assessment was attended by representatives of key stakeholders such as the board, company management, employees, enterprise customers, investors, media, NGOs, and suppliers. StarHub recognizes the integration of sustainability practices into supply chains and procurement as a crucial part of sustainability. Its supply chain consists of a total of approximately 1,900 suppliers and it is important that suppliers share a common value base with the company. This is ensured by identifying high-risk suppliers as a part of supply chain risk assessments, implementing a supplier code of conduct, using a responsible sourcing policy, and demanding existing suppliers with an annual spend of over \$1 million and all the new suppliers to fulfill a self-assessment. StarHub exercises active supplier engagement and collaboration with suppliers. Suppliers are engaged through face-to-face meetings, emails, and teleconferences. (StarHub 2022.)

In the future, StarHub will continue to intensify its own climate risk assessment. Increasing efforts have been made in waste management in recent years. Customers are currently offered a return service for old devices when executing a new order. In this case, no additional cost will be charged and returned devices are safely disposed. The “Skip the Bag” initiative and the surcharge on paper bags are concrete measures to reduce packaging waste. The use of paper bags declined by 80% from 2020. FSC MIX-certified biodegradable paper bags were also introduced in 2020. (StarHub 2022.)

During the coronavirus pandemic, the management has held monthly events to share information and answer questions related to business and people matters. Many of the company's internal practices have also been extended to suppliers. Cybersecurity and information security policies, procedures, guidelines, and checklists extend to third-party suppliers. Contractors working on construction sites are required to comply with the regulations of the Workplace Safety and Health Act., in addition to which the risk assessment performed by the contractor must be approved by StarHub before starting work. External partners may also report any findings regarding abuse through StarHub's whistle-blowing channel. StarHub has also focused on employee development as certain divisions are engaged in portfolio rotation to develop skills and diversity of the workforce. (StarHub 2022.)

In 2021, StarHub made several donations to various communities and organizations. The total amount of money donated was \$882,200 and receivers were, for example, The Food Bank Singapore and SHINE Children and Youth Services. Overall, the goal is to engage local communities using community outreach programmes, sponsorships, and sustainability reporting. StarHub also collaborates with various NGOs, exemplified by the collaboration with the Singapore Environment Council. A total of 375 schools participated in the School Green Awards programme which was organized in cooperation with the Singapore Environment Council. StarHub's subsidiary sought to build a more inclusive work environment and increase employment opportunities for differently-enabled staff in partnership with the Singapore Autism Resource Center. (StarHub 2022.) Table 8 summarizes StarHub's environmental and social SSCM practices found in the annual report. (StarHub 2022.)

Table 8. A wrap-up of StarHub's environmental and social SSCM practices (StarHub 2022)

Environmental	Social	Both
Certifications (e.g. FSC MIX)	Community initiatives	Collaboration with NGOs
Climate risk assessment	Cyber and information security	Identifying high-risk suppliers
Green packaging	policies extended to suppliers	Materiality assessment
Participating in initiatives	Diversity of workforce	Responsible sourcing policy
Recycling	Events held by the management	Supplier code of conduct
Waste management	Health and safety of workers	Supplier collaboration
	Sponsorship	Supplier engagement
	Whistle blowing channel	Supplier self-assessment
		Supply chain risk assessment

## 5. DISCUSSION

The idea that CSR is the foundation for a company having a sustainable supply chain was the basis for this thesis' conceptual framework. By utilizing three dimensional practices in line with the TBL theory, a company would be able to achieve a sustainable supply chain. The conceptual framework was built to support the main research question; "How can a company ensure the sustainability of its supply chain?". The main research question was supported by the existing literature. Various authors identified different economic, environmental, and social practices that could be implemented by a company to achieve a sustainable supply chain. The aim of this chapter is to address the general observations from the empirical part, as well as to compare the most important environmental and social practices found in the annual reports with those previously identified in the literature.

Analysis of the case companies revealed that the exact classification of SSCM practices into environmental and social categories may not always be appropriate. This became apparent for each case company as the "Both" column gathered a lot of practices that could be interpreted as environmental or social. According to Hubbard (2009) defining precise environmental and social performance can prove to be challenging. The finding is also supported by Kuhlman & Farrington (2010) who believe that the difference between the three dimensions is conceptually blurry. For example, in this study collaboration with stakeholders and deployment of the Code of Conduct were often utilized as environmental and social practices.

Despite some similarities, the analysis of the case companies showed clear support for the differences in environmental and social SSCM practices utilized by the case companies. The differences were significant between industries where the risks related to supply chain sustainability varied. This finding is supported by Hsu et al. (2014) who claim that practices vary depending on the industry, product type, and level of integration. In accordance with Narimissa et al. (2020), evidence was also found that companies utilize SSCM practices even in their strategic planning. Several case companies stated that supply chain sustainability has an important role in the company's strategy. As stated in the conceptual framework of this thesis, a sustainable supply chain can be achieved by adopting SSCM practices. Thus, this

finding may also have an effect toward the case companies' attitude on the importance of SSCM practices. Overall, this provides indirect support for the finding of Zailani et al. (2012) that SSCM practices have a positive effect on sustainable supply chain performance.

Companies seeking sustainability follow certain practices in their supply chains. (Beske & Seuring 2014). What the case companies had in common, was the collaboration with a variety of stakeholders highlighted. It was noteworthy that all the case companies emphasized cooperation with various internal and external stakeholders, such as NGOs, suppliers, governments, trade associations, customers, employees, and local communities. As case companies collaborated extensively with stakeholders on both environmental and social issues, they strived to gain multiple perspectives through collaboration but also better transparency. Faisal et al. (2017) and Alghababsheh & Gallear (2020) highlight the importance of collaboration with suppliers, while Miemczyk & Luzzini (2019) see collaboration with NGOs or other stakeholders as important. Kähkönen et al. (2018) mention downstream supply chain actions as a measure to increase transparency to the customer.

Common for the case companies was the consideration of local communities by providing support. Support was provided, for example, through participation in initiatives, training, or direct financial donations or sponsorship. The case companies followed slightly different emphases based on their values, but support steered to children and young people, as well as human rights were common. Modak et al. (2020) emphasized that several MNCs have implemented corporate responsibility by donating significant amounts of money to communities affected by their supply chains. These donations can be related to, for instance, improving the natural state or solving social problems. Carroll's pyramid of CSR (Carroll 2016) classifies ethical responsibilities as above the legal responsibilities that society expects from a company. At the top of the pyramid are the philanthropic responsibilities that society desires from a company.

In its reporting, global technology giant Cisco Systems emphasized the importance of greenhouse emission targets. According to the company, greenhouse emissions should be measured in cooperation with suppliers and then set precise targets for reductions. Overall, the environmental work was guided by ISO 14001 standardized environmental management system. According to Mathivathanan et al. (2019) environmental management systems with

ISO 14001 standardization are becoming more common in pursuit of environmental sustainability while Vachon & Klassen (2006) recognize emissions caps as an increasingly common requirement for suppliers. Related to the circular economy, product design, recyclability, renewable materials, and reverse logistics were emphasized, which is in line with the theoretical part of this thesis. (Mathivathanan et al. 2019; Miemczyk & Luzzini 2019). Typically for the industry, human rights especially in relation to the procurement of minerals also came up. Some tools worth mentioning to answer these challenges were human rights programs, due diligence inspections, collaboration, supplier code of conduct, and audits. Vachon & Klassen (2006) also mention that suppliers may be required to comply with certain codes or standards.

The real estate company City Developments highlighted occupational safety risks related to the construction business. Health and safety management systems according to the OHSAS 18001 or ISO 45001 standard were the basis of occupational safety at construction sites and were required from builders. Miemczyk & Luzzini (2019) mention that suppliers may be required certain safety obligations. Faisal et al. (2017) see the deployment of health and safety management systems as a way to boost social performance on the supply chain level. Certain occupational safety risks such as working at heights were emphasized and answered with, for example, special training, site-specific committees, and a feedback channel where safety deflections could be reported which is in line with Alghababsheh & Gallear (2020). In terms of environmental sustainability, eco-friendly materials were emphasized. They are invested in product development in cooperation with partners. Stakeholders are also encouraged to prefer eco-friendly solutions and non-toxic materials. Faisal et al. (2017) suggest that even banning materials causing serious health hazards would be an effective way to improve social performance.

In its Corporate Responsibility Report, semiconductor manufacturer Intel highlighted environmental and social practices in a balanced way. A special feature of Intel's sustainability challenges seemed to be responsible mineral sourcing, for which the company had developed an internal Responsible Minerals Sourcing Policy. In addition, there was separate co-operation with NGOs on the issue. The eco-design of products and packaging was used to reduce the life cycle climate impact of Intel's products. According to Faisal et al. (2017) recycling and reuse are tools for efficient SSCM to reduce resource use and

procurement plays a crucial role in finding alternative materials and find to reduce packaging waste. Mathivathanan et al. (2019) recognize greener product design and green packaging as a collaboration level practice with suppliers and emphasize long-term commitment instead of fast wins. Reverse logistics was also utilized, as the reuse and recycling of products was at a high level. Faisal et al. (2017) classify recycling and reuse are tools for efficient SSCM to reduce resource the use while Mathivathanan et al. (2019) mention use of reverse logistics as an environmental-related practice.

In addition to local sourcing, Intel introduced large in-house production as a way to take better care of sustainability issues. However, a lot of effort was put into the sustainability of suppliers. Sauer & Seuring (2019) remind the importance of upstream raw material suppliers in relation to supply chain sustainability. Tier 1 suppliers were asked to complete a questionnaire related to environmental issues. The due diligence process, risk analysis, supplier reports card, and audits were used in the selection and supervision of suppliers. According to Vachon & Klassen (2006) environmental monitoring of suppliers can include company-specific questionnaires and audits performed either by the buying company or a third party. Efforts were made also to develop suppliers through training and free online tools. Human rights were taken into account in contracts and training with suppliers. Alghababsheh & Gallear (2020) define supplier collaboration as a buying company's intensive work with suppliers with a desire to improve supplier's performance in the selected area and state that it is beneficial in social-related matters. Significant was Intel's risk management system which extended to more than 100 Tier 2 suppliers and suppliers were also required to utilize safety management systems and work-hours management. The Code of Conduct was extended to all suppliers and other business partners. According to Liu et al. (2022) CSR violations are more likely to occur among Tier 2 suppliers and are more critical compared to Tier 1. In this sense, focusing on Tier 2 suppliers is effective.

The annual report of Neste combined environmental and human rights issues. However, as Neste's future potential mostly relies on renewable products and solutions, the focus seemed to be slightly more on environmental practices. The company completes a materiality assessment every second year, which serves as a framework for the company's sustainability efforts. Neste renovated its Code of Conduct in 2021, and also requires its suppliers to comply with its ethical business standards. Neste also has a separate Supplier Code of

Conduct. Andersen & Skjoett-Larsen (2009) claim that since the early 1990s, companies have started to use the Code of Conduct to list requirements for suppliers. The selection criteria for suppliers included specific requirements from an environmental point of view, in addition to which suppliers were regularly audited. The procurement of renewable raw materials complies with the internal Responsible Sourcing Principle, the Human Rights Principle, and local legislation. It is important to pay extra focus on supplier selection as there is a positive correlation between effective SCM and the quality of supplier selection and it might be determinative for future competitiveness. (Faisal et al. 2017). According to Miemczyk & Luzzini (2019) audits can be used to confirm whether suppliers fulfill required standards.

Neste had started biodiversity assessment with local actors and suppliers were also required to take action to conserve biodiversity. The goal of a carbon-neutral value chain to be achieved in 2040 is supported by cooperation with suppliers in the fields of energy production, logistics optimization, and emissions from raw materials. Faisal et al. (2017) highlight cooperation with suppliers as no company can street its supply chain by acting alone. For Neste, it is vital that the origin of all raw materials is traceable. All raw materials must also be certified or otherwise comply with local laws and regulations. Kähkönen et al. (2018) classify both certification and traceability as SSM practices where certification is to ensure the regulation and traceability is a part of upstream supply chain management. Neste regularly interacts with suppliers in areas such as sustainability policy development, traceability development, and grievance mechanism. Approximately 99% of suppliers that are providing renewable feedstocks are socially screened, and the supplier approval process takes place mainly on Neste's Supplier Sustainability Portal. Risk management considers country-specific risk factors, but also individual supplier risks are examined. Launched in 2021, supplier desktop reviews are based on publicly available data. Vachon & Klassen (2006) mention the exploitation of public environmental documents as a tool in the environmental monitoring of suppliers.

Schneider Electric also based its sustainability strategy on materiality assessment. The importance of cooperation with suppliers was underlined in reducing greenhouse gas emissions and the company mentioned purchases as the source of its emissions. Mathivathanan et al. (2019) classify environmental purchasing as a tool to provide greener

materials for production. Cooperation with suppliers on environmental matters is supported by Miemczyk & Luzzini (2019) who say that focusing on environmental sustainability is likely to lead to supplier collaboration-related actions. The biggest individual actions for Schneider Electric were training, the use of green materials, and recycling. Risk management had been taken into account in the selection of suppliers. This is also important human rights wise, as most of the risks identified by the company were related to safety at the working sites. Supplier diversity was also mentioned as a crucial issue, which is promoted by supporting businesses owned by minorities, for example. These actions are supported by existing literature, where diversity in the supply base, human rights, and the health and safety of workers have been seen directly affecting social responsibility. (Faisal et al. 2017).

Telecom provider StarHub conducted a materiality assessment update in 2021, where the company's key stakeholders discussed sustainability issues. The annual report showed that StarHub has a massive number of suppliers, so the classification of suppliers by risk assessment, for example, is emphasized. A supplier code of conduct, responsible sourcing policy, and a supplier self-assessment have also been utilized, in addition to which StarHub engages in supplier engagement and collaboration. According to Govindan et al. (2013) companies are becoming more aware of the actions of their business partners. Faisal et al. (2017) argue that in general, the supplier base should be reduced as long-lasting collaboration with a smaller amount of suppliers should lead to better quality and productivity. On the other hand, information and communications technology tools have made finding new suppliers easier. Interesting was StarHub's whistle-blowing channel, where external partners were able to report any misconduct they noticed. Reverse logistics was utilized in waste management, as customers ordering a new device were given the opportunity to return the old device free of charge. Packaging waste was reduced with the "Skip the Bag" initiative and FSC MIX-certified biodegradable paper bags were introduced in 2020. Faisal et al. (2017) found evidence that proper waste management also improves financial results in addition to lower resource use. Mathivathanan et al. (2019) acknowledge a connection between better environmental protection and the use of renewable packaging materials.

## 6. CONCLUSIONS

The main goal of this chapter is to answer the set research questions based on the empirical part and the discussion in the previous chapter. Tables have also been used as support, which concretely shows the environmental and social practices that frequently occurred in this study. Answering is started with sub-questions, which are used to form an answer to the main research question. Finally, limitations will be discussed and suggestions for future research will be given.

### 6.1. Answering the research questions

*What are the practices that companies use to ensure the sustainability in their supply chain?*

Although an accurate classification of practices into economic, environmental, and social might not always be appropriate, it can be said that companies use different economic, environmental, and social practices to ensure the sustainability of their supply chains. Based on the empirical part of this thesis, the emphasis on environmental and social practices varies depending on the industry. However, recurring practices without exception include extensive cooperation with various stakeholders, Code of Conduct, environmental and social-based assessments, and recycling. Companies without exception also supported local communities financially or by joining initiatives. Based on the previous literature, practices aimed at ensuring the financial viability of a company can be classified as economic practices.

*According to the annual reports, what practices are applied in SSCM from an environmental point of view?*

In addition to the practices mentioned above, the empirical part of the thesis revealed several practices that the majority of the companies utilized. These included audits, compliance with standards such as ISO series, green packaging, and environmental management systems. Depending on the industry, optimization of logistics, traceability of raw materials, greenhouse gas reduction, and green design also appeared several times. Table 9 summarizes

all the environmental-related practices that the majority of the companies brought up in their annual reports.

Table 9. Most common environmental practices in the annual reports

<b>Practice</b>	<b>Frequency</b>
Code of Conduct	6
Collaboration with stakeholders	6
Environmental based assessments	6
Recycling	6
Audits	5
Complying with standards such as ISO series	5
Green packaging	4
Environmental management system	4

*According to the annual reports, what practices are applied in SSCM from a social point of view?*

In addition to the practices mentioned in the first chapter, most of the companies utilized audits, human rights policies, and supplier training. Depending on the industry, whistleblowing channels, due diligence inspections, supplier diversity, and health and safety management also came up several times. Table 10 summarizes all the social-related practices that the majority of the companies mentioned in their annual reports.

Table 10. Most common social practices in the annual reports

<b>Practice</b>	<b>Frequency</b>
Code of Conduct	6
Collaboration with stakeholders	6
Social based assessments	6
Supporting local communities	6
Audits	5
Human Rights Policy	5
Supplier training	5

### *How can a company ensure the sustainability of its supply chain?*

A company can ensure the sustainability of its supply chain by implementing general and industry-specific economic, environmental, and social sustainability practices. Irrespective of the industry, a comprehensive collaboration with different stakeholders, code of conduct, and assessments are essential, both environmental and social wise. Regarding environmental practices, the majority of companies take advantage of recycling, audits, green packaging, and environmental management system, and comply with standards such as the ISO series. Related to social practices, the majority of companies utilize audits, human rights policy, supplier training, and support local communities.

#### 6.2. Limitations and future research suggestions

The main problem with the use of documents (including annual reports) as scientific research material is the question of their objectivity. Documents should be viewed critically and, where possible, efforts should be made to confirm what has been said by using also other sources of information. When assessing reliability, it is important to remember who produced the document, why it was produced, and to whom it was produced. In many cases, things missing from a document might be more meaningful than things that were told. (Kananen 2017.)

In this study, the geographically and industrially distributed selection of case companies made it possible to find a wide range of best SSCM practices employed today, although the practices are constantly evolving. However, a significant question is a one-sided picture the annual reports present. In general, it is important to remember that companies have certain interests in preparing their annual reports. Based solely on the annual reports, a critical examination of the companies would be challenging if not impossible. On the other hand, this study focused only on finding the best SSCM practices and the assessment of corporate sustainability had been conducted by Corporate Knights. Companies should have an interest in sharing their good sustainability practices using annual reports.

In future research, in addition to using annual reports as the singular data source, different stakeholder groups could be interviewed. Such stakeholders could be suppliers, members of

local communities, and employees, for instance. This would enable a multidimensional study instead of a company-centric view, which could also reveal some criticism towards corporate sustainability. It would also be interesting to compare the issues presented by the companies in their annual reports with the issues brought in interviews by stakeholders, and then see whether there will be any conflicts.

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